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[NOTICE.]

Wrinkle Department, American Gas Institute.

WRINKLE DEPARTMENT, AMERICAN GAS INSTITUTE,
OFFICE OF EDITOR, GAS OFFICE BUILDING,
DETROIT, MICH, March 12th, 1909.

To the Members, American Gas Institute: All members of the American Gas Institute are earnestly requested to forward contributions for the Wrinkle Department as soon as possible.

Your co-operation determines the success of the Department.

F. L. CROSS, Editor.

[NOTICE.]

Fourth Annual Meeting, Natural Gas Association of America.

NATURAL GAS ASSOCIATION OF AMERICA,
OFFICE OF SECRETARY,
DELAWARE, O., March 8th, 1909.

You are most cordially invited to attend the Fourth Annual Meeting of the Natural Gas Association of America, to be held in Columbus, O., May 18th, 19th and 20th, 1909.

The meetings will be held in Assembly Hall, Great Southern Hotel, the headquarters. The Great Southern is conducted on the American plan, and the following rates have been secured for the meeting—$2.50 to $5 per day. The most satisfactory quarters are always obtained by writing in advance to the hotel people, who will put forth every effort for the comfort of the Association.

The Governor of Ohio, Hon. Judson Harmon, will welcome the Association at the opening of the meeting.

A most interesting feature will be an exhibition of gas appliances.

The technical programme of the meeting is being compiled, and will be sent out later by the Secretary of the Association.

It may be that you are not a member of the Association, and, in soliciting you to become a member, we are not offering you a grand opportunity for disappointment, nor is there the least element of chance in the matter. You can submit your application at the meeting, but you will be showing the Association considerable courtesy and doing yourself a good turn should you sign and send in at once the inclosed application blank.

Columbus is a most attractive convention city, and the Committee on Local Arrangements will do all in their power to entertain all those who attend the meeting.

T. C. JONES, Secretary,
Committee on Local Arrangements.

BRIEFLY TOLD.

THE MARCH MEETING, NEW YORK SECTION, ILLUMINATING ENGINEERING SOCIETY.—On the evening of the 18th inst. a goodly number of both gas and electric men were on hand, at the United Engineering Societies' Building, to listen to two papers covering diverse subjects pertaining to the art of illumination. One by Mr. Bassett Jones, Jr., concerning "The Mathematical Theory of Finite Surface Light Sources;" and the other was by Mr. A. J. Marshall, who spoke on "Illuminating the Editorial Offices of the New York *World*." Contributions from the thought of the former are usually of moment, and the one in question will increase his prestige, although the matter may not be used to any considerable extent. Calculations of light intensities from ordinary polar curves, are comparatively simple, but the conditions are considerably altered when a diffusing material, such as glass, is interposed. In order to form a basis for calculation, 1 square foot of surface is taken as unit area, and the polar curve of this unit, where all of the light is below the horizontal, is transposed to circular measure. The author also presented a number of formulæ covering several kinds of unit surfaces. The paper by Mr. Marshall contained a description of a combination mercury-vapor and tungsten lamp fixture. These are two of the most efficient electric illuminants in use, but the efficiency of the installation was only about 10 per cent., which the author said was due to the construction of the in-

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MAR 29 1909
SMITHSONIAN DEPOSIT.

closing globe. Figures on the tests of illumination were many, though they were not in every sense convincing. The major part of the discussion was concerned with the inefficiency of the installation and kindred subjects. Those who voiced their ideas were Messrs. Wohlauer, Littlefield, Gardner, Appleton and Lansingh, and Dr. McAllister and the Chairman, Prof. Elliott. Announcements were made as follows: The April meeting will be held in conjunction with an exhibition, to be held by the Municipal Art Society and the National Arts Club, at a date to be announced later. The paper will be presented by Prof. Elliott on the subject of "Lighting the City Beautiful." At the May meeting there will be two papers, one by Mr. Wohlauer on the "Calculation and Design of Illumination," and "The Design of Illumination Units," by Messrs. Hopton and Watkins, of the Enos Company.

CURRENT MENTION.—

MR. W. A. BAEHR informs us that he has opened up an office in No. 1943 Commercial National Bank Building, Chicago, in which headquarters he will carry on the business of Consulting Engineer, with particular reference, of course, to the field of gas engineering. May nothing but luck attend him in this venture.

MR. F. W. BEDARD, formerly General Superintendent of the Citizens Lighting Company, of La Salle, Ills., is now Engineer of the Illinois Traction System, with headquarters at Peoria, Ills., in connection with operating the gas and electric properties of the named concern.

MANAGER C. F. PRICHARD seems to have again convinced his Board of Directors that the Lynn Gas and Electric Company will be all the better off through declaring a dividend to its consumers. At any rate such is the declaration which we make from a statement issued last week that, on and after July 1st, next, the net price of gas manufactured and distributed by the Lynn Gas and Electric Company shall be 80 cents per 1,000 cubic feet. This rate applies also to the districts of Swampscott, Nahant and Saugus.

MR. D. W. FLOWERS has resigned the position of Superintendent to the Binghamton (N. Y.) gas works to accept an important position with the Consolidated Gas Company, of New Jersey, at its Long Branch station. Mr. George E. Conlee, of Ithaca, N. Y., succeeds Mr. Flowers at Binghamton.

Correspondence.

[The JOURNAL is not responsible for the opinions expressed by correspondents.]

Thoughts on Meter Shop Maintenance.

LOWELL, MASS., March 22d, 1909.

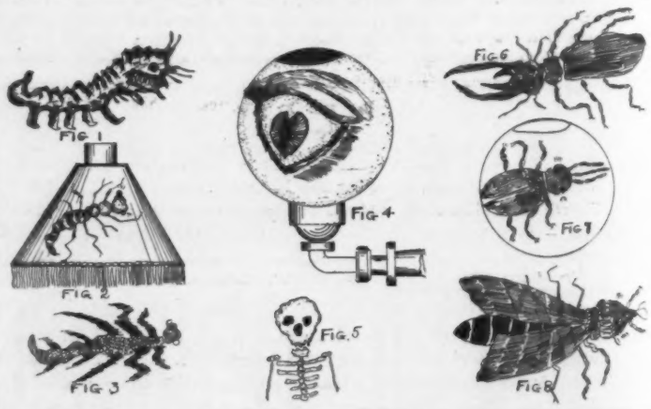
To the Editors, AMERICAN GAS LIGHT JOURNAL: What is unaccounted-for gas? Let it be what it may, in my estimation, a gas meter gets very little credit for this secret of loss. A repairman, right from the gas meter manufactory, appointed to take charge of the company's meters, whether there be 1,000 or 50,000 of those at stake, assumes offhand the most responsible job in the gas works; but, in how many cases is he or the job treated as such? The gas meter earns your dividends. Why, then, are gas companies so indifferent to or neglectful of their meters? The hiring of cheap repairmen comes in the end very dear when the company figures out its unaccounted-for gas. Most officials seem to think that a gas meter is all right which passes State or city inspection as correct at 2 per cent. fast or slow, on a rate 6 feet per hour for each light a meter is marked to burn. This is a small portion of the gas that passes through the meter that is absolutely correct the day of registration. You may go further; but this will likely be enough to show that ordinary gas meter inspection carried on in such a way is little more than a farce. How many gas officials know there are two rates to a gas meter—one being the consumer's rate, for which your company must pay the inspector's fee. The other is the gas company's. You have no protection, except through the average. I would suggest that if the gas companies of each State, or combination of States, would come together and get the most experienced man as possible on gas meters, a man who can design, make, repair, prove and improve meters in the most economical way, and have this man go from one shop to another when a repair man is necessary; further, that the smaller companies send their repairs to a main shop. It would mean great saving all round, and especially so for the New England Companies that have a large percentage of unaccounted-for gas. I am told that there will soon be placed on the market a meter in general far superior to any now on the market. Yours truly, A READER.

Curious and Illuminated Lamp Shades.

[Communicated by "R."]

We live in an age of illuminated novelties. Designers of lighting devices are forever striving to introduce something new and salable in the illuminated lamp globe order. The result of the most recent introduction of novelties in this line is the utilizing of specimens of bugs, insects, moths, butterflies, caterpillars and the like, for special designs in the globe and shade work. The object in using the reptile like form is to get an opportunity to introduce glaring eyes through which the strong light is arranged to shine in most startling fashion. The hostess of the house is much pleased if she can give her guests the startling effect of a grinning skull represented in a deluge of artistic designs on some lamp shade. The lady of the house likes to open the study door suddenly, thereby revealing the green eyes of a big bug on the reflecting globe of the gas arc or other light. The sedate man of the house considers it a pleasing joke if he can surprise his visitor with the greedy glass eyes, in rich hues of the rainbow, of some venomous reptile represented in complete detail on a shade. Just where the pleasure is in shocking people with glowing balls of fire representing the fixed eyes of a beetle bug, or something else, is unknown. However, it is the business of the illuminating engineer to keep abreast of the times and supply whatever the people demand.

During the past season there has been a call for artistic effects in lamp shades produced by the patterning, in lifelike form, of insects and various reptiles on the shades. Often the embossed effect of the caterpillar is wonderfully natu ral when the form is illuminated by



the varied greenish hues passing through the shade from the light within. But the chief feature is the eyes. The fantastic effects possible to be obtained are unlimited. The illuminating engineers who have undertaken this line of work tell me that it is exceedingly interesting and without restriction. There is no defining line as to the climax. First, the eyes, then the scales, then the form of the feet or head, then something else. The outlines are derived by permitting the light to impregnate at the required parts. Transparency is obtained by thinness of walls, or by use of materials through which the bright light may shine. In some cases the surfacing is eradicated completely for the passage of the volume of light.

A number of illustrations are herewith given to exhibit some of the characteristic types. The horned, creeping pest, as shown in Fig. 1, always offers a good subject, because the eyes can be made large and protruding. The eyes can be built out, if desired, and, the colored glass or tinsel offsetting the same, will give the hue through the apartment. The intensely green eyes are outdone only by the crimson red.

Fig. 2 shows a type of bug with the objective eyes, built out like beads, offering a good chance to get in colored effects. Little electrical globes are used for this work in some cases. In the employment of a large figure, it is possible to get some very fiery eyes. The production of a large bat with shining eyes struck me as quite a unique thing. Fig. 3 is another form of reptile sometimes used with the light. In the shell effect, the light is allowed to impregnate for the purpose of giving a wavy presentation.

One hideous design observed was an eye arranged so that from the front you saw staring out of the darkness at you what seemed to be the single eye of a green-eyed monster. The effect was made by painting the eye on a colored globe, as in Fig. 4. The paint obviated

the passage of the light, thereby permitting the rays to shoot through and form the eye where devoid of the material.

In another case I saw a form of skull and crossbones, as in Fig. 6, staring at me out of the darkness in the study of a friend. My friend had a good-sized, white globe, painted black, except the parts needed to be white to define the form of the skull and ribs. The shining of the light through the white glass produced the skull and bone effect quite realistic.

Fig. 6 is another bug I saw produced on a shade, while Fig. 7 shows another. Fig. 8 represents a popular kind employed in this line of work.

There are several classes of these ornamented shades. Some are intended to give the eye a black and white effect by simply blacking out the form, allowing the light to shine through the white. White lettered, illuminated signs are made this way. Another class includes the colored effects in which beauty of design and hue are important factors. The interesting class at present includes the insects, the animals and forms in which it is possible to get glowing eyes, glistening fangs, shining teeth, etc.

[Continued from page 496.]

SECOND ANNUAL CONVENTION, INDIANA GAS ASSOCIATION.

HELD AT CLAYPOOL HOTEL, INDIANAPOLIS, IND., JAN. 20TH AND 21ST, 1909.

FIRST DAY—AFTERNOON SESSION.

The next item on the programme is a lecture by Mr. A. B. Davis, Chemist to the Indianapolis Gas Company, the subject being

GAS CHEMISTRY.

The following description of apparatus and methods of chemical analysis refers to those usually used in the laboratories of gas and coke oven plants.

Since the quality of coal is one of the main features in the operation of any gas works, it is very essential that the gas coal should be suited for gas making purposes, and the fuel coal used under boilers and retorts have a high standard of heating value. An easily operated calorimeter, such as the Parr or a similar type, may be used, since they are comparatively easy to operate and give fairly accurate results. In the Parr calorimeter a known weight of coal undergoes complete and rapid combustion in a bomb, and the liberated heat is measured by means of a surrounding body of water to which it is communicated. The volume of water in cubic centimeters times the rise in temperature in degrees C. gives the heating value of the coal in calories.

The most widely used of all gas calorimeters is perhaps the Junkers. All gas calorimeters which have so far come to my attention are merely efficient water heaters. The volume of water (heated) in cubic centimeters times the rise in temperature in degrees C. gives the heat liberated in calories for any definite amount of gas burned. From these figures we may calculate B.T.U. per cubic foot, calories per liter, or any other figure which we may wish.

Since sulphur causes a great deal of trouble in gas works by contaminating the gas and ammonia liquor, means of testing for its presence in the form of hydrogen sulphide, carbon disulphide, thiophene, or combined with cyanogen in the form of sulphocyanides are useful. The presence of hydrogen sulphide in gas or ammonia liquor, may be at once detected by the fact that it discolors a solution of lead acetate or starch iodide. Carbon disulphide in gas may be found if a measured quantity is bubbled through a solution of phenyl hydrazene in benzine. If carbon disulphide be present in any quantity it will form a precipitate with the phenyl hydrazene which contains 21.9° of sulphur. The precipitate may be filtered off and weighed, and the quantity of sulphur in any known gas calculated as sulphur in the form of CS_2. If this test be used for CS_2, H_2S must first be removed by means of caustic potash, since it also forms a precipitate with phenyl hydrazene. The sulphur, in the form of H_2S in ammonia liquor, may be estimated by adding a measured volume of the liquor to an acid solution of starch iodide, and titrating the liberated H_2S with an iodine solution of known strength. Sulphur in coal and coke may be easily and rapidly estimated by igniting a known weight of the sample with sodium peroxide, and after acidifying adding barium chromate and titrating the liberated chromic acid with an iodine solution of known strength.

Carbon dioxide is an inert and detrimental impurity in an illuminating or fuel gas, and may be easily estimated by absorption with caustic potash in a Hempel or an Orsat apparatus. It may be detected in ammonia liquor by the addition of a barium or calcium chloride solution, when if CO_2 be present a precipitate of barium or calcium carbonate will be obtained. If a quantitative estimation is desired, the reagent is added in excess to a measured volume of sample, the carbonate filtered off and titrated with an acid of known strength in the presence of an indicator, such as phenol, phthalein or cochineal.

Ammonia in crude ammonia liquor should never be estimated by means of a hydrometer, since this method often leads to sadly erroneous results. If the presence of ammonia liquor were all that caused a variation in the gravity the hygrometer might well be used, but the presence of ammonia in the form of fixed salts, or as carbonate and sulphide, causes variations in gravity which are by no means constant when compared with the amount of ammonia present. Samples of ammonia should, therefore, always be titrated with an acid of known strength, a definite volume of sample having been taken. This titration gives the ammonia present in the form of free salts; the fixed ammonia can be estimated only by distillation with an alkali such as caustic soda. This liberates the fixed ammonia and drives it out of solution, and it may be caught in an excess of acid and titrated as usual.

Pyridine a substance occurring in coal tar, and in ammoniacal liquor, and at present used in a considerable extent to denaturize alcohol, is a by-product in the manufacture of aqua ammonia from gas liquor. The pyridine oil which contains only about 40 per cent. pyridine separates in the washers, and may be drawn off and purified. Although the quantity produced in a year is comparatively very small, it is a product which finds a ready market at a good price.

Abroad, where large quantities of blue water gas, and Mond producer gas are piped about the country for fuel, the law requires that these gases have perceptible odor. The compound which possesses an odor which is probably the most powerful, and rapidily disseminating of any known to chemistry is phenylisocyanide, prepared by boiling together chloroform, aniline and concentrated alcoholic potash. A small quantity placed in a vessel in a gas main is sufficient to odorize several million feet of gas.

There are to-day in the oil market many grades of gas oil, some of which are excellent for gas making purposes and others almost unfit for that purpose. The market seems to be flooded with mixtures of light oils and heavy asphaltic residues. The light oils are, of course, added to cut the asphaltic residue, and reduce the gravity. Since these indications exist in the market the time has come when the gravity of the gas oil means nothing at all, since the gravity of a light oil and asphalt mixture may be either higher, or lower, than has a good gas oil. In order to illustrate I give the results of the fractional distillation of three samples:

	Sample No. 1.	Sample No. 2.	Sample No. 3.
Specific gravity	.860	.846	.853
Boiling point	155° C.	160° C.	155° C.
B.P. to 200° C	16.5 per cent.	0.0 per cent.	9.5 per cent.
200–250° C	24.0 "	10.5 "	12.0 "
250–275° C	10.0 "	16.0 "	18.0 "
275–300° C	6.0 "	23.0 "	20.5 "
300–350° C	5.0 "	18.0 "	20.0 "
350–400° C	2.0 "	7.0 "	8.0 "
Residue	36.5 "	25.5 "	12.0 "

No. 1 sample contains 16.5 per cent. of light oil below 200° C., and a very high residue of an asphaltic nature. A glance at the fractions shows at once that it is a mixture, as no direct-run or crude oil would ever give such fractions. No. 2 sample is quite a fine specimen of gas oil, although the residue is a little high. The nature of the residue, however, is such that there is no reason to assume it would crack up in the water gas apparatus, as it contains almost no asphalt and is perfectly liquid at ordinary temperatures. Asphaltic residues above 400° C. are, as a rule, a sticky, gummy mass. Sample No. 3 is also a good gas oil, since the residue is low and contains little asphalt. There is, however, somewhat more light oil below 200° C. than we might wish for in an ideal oil for gas making purposes.

The President—As the hour is late we will discuss Mr. Davis' very valuable paper the first thing to-morrow morning. The convention is declared adjourned until to-morrow morning at 10:30.

SECOND DAY—MORNING SESSION.

Discussing the Davis Lecture.

The President—The first thing this morning will be the discussion of the lecture by Mr. Davis yesterday afternoon. Mr. Thwing, who

was to open that discussion, apparently has not arrived. We would be pleased to have remarks from any gentleman present.

Mr. Pickens—I just asked Mr. Davis a question that I would like him to answer, for the benefit of the other members of the Association, whether he considers the Junkers calorimeter the best one of the lot—there are several on the market. I think all of us will have to consider the installing of a calorimeter, sooner or later, probably sooner; hence we should like to know whether he considers this one the most effective?

The President—Gentlemen, I felt sure if we had not adjourned yesterday evening the discussion of this lecture would have been very interesting as well as instructive, so I am sorry the lecture was given under the disadvantages of an adjournment.

Mr. Draper—While I am not interested in the manufacture of gas, I would ask if Mr. Davis's assistance could be used for the benefit of making proper tests for other gas companies throughout the State. For instance, if some of the companies having considerable trouble with the oil they are using could get Mr. Davis to make the proper tests for them, providing they would come to some kind of an understanding with him, of course, that he should be compensated for the work.

The President—Gentlemen, have you any other questions? If not, Mr. Davis, will you please answer the questions that have been asked.

Mr. Davis—Regarding the Junkers calorimeter. The price of that instrument, as quoted by the agents in New York, for the company, is $135. That price is for the calorimeter alone, just as it stands, without meter or regulator. Of course, there is a very accurate meter reading to 1/1000 of a cubic foot—about 1 liter of gas. A very delicate water regulator should also go with the instrument, so that the complete output will cost somewhere between $150 and $200. I believe the Junkers calorimeter is about the best on the market, although a number of advantages are claimed for other instruments, for instance, some of them have all the thermometers, at the water inlet and outlet and waste gas outlet, all in line; the Sargent calorimeter has them arranged in this way. I find this is very little advantage since the water entering the calorimeter varies little in temperature, and after taking it once it is only necessary to take it at the outlet. For some calorimeters the claim in respect to radiation of heat downward is less than in the Junkers, and there is lost through that source only about 1/300 of 1 per cent., so there is no reason for believing the calorimeter is inaccurate from that cause. I think anyone who wishes to install a gas calorimeter will do well to get that instrument. As to other work from outside sources I have to say that our General Manager has given me permission to do anything of that kind that may come in. All that is necessary is that samples be sent me with careful directions as to just what kind of analysis is wished. [Applause.]

The President—I believe the special thanks of the Association should be extended to Mr. Davis for his interesting lecture. [Moved and seconded.] It has been moved and seconded that a special vote of thanks be extended to Mr. Davis for his very entertaining, interesting and instructive lecture. All in favor please say "Aye;" contrary, "No." It is so ordered. The next paper on the programme I am sure will interest all of you very much. I regret that the full attendance of the Association is not represented at this morning's session, and I feel that possibly we should not go on with this paper for, perhaps, a few minutes. The author of it is from a distance out of Indiana, and he should receive the utmost courtesy that we can show him.

The President introduced Mr. F. M. Loomis, of Indianapolis, who read his paper on

THE HANDLING AND COLLECTING OF DELINQUENT ACCOUNTS.

[For the text of the Loomis paper, see JOURNAL, *ante*, p. 361.]

Discussion.

The President—Gentlemen, you have heard a paper on a subject of much concern frequently to the manager of gas properties. We would be pleased to be enlightened by the individual experiences which any of you may have that you deem worthy to offer. Have you anything to say, Mr. Keller?

Mr. Keller—Mr. President, as I am out of that line of business, collections do not bother me any more; but, although I am out of that line, let me say this: Our town is not a large one, and when we were running the plant we had a flat rate and aimed to get the accounts collected at least once a year. We knew all of our customers, and I believe that we had at least as little trouble as any other gas company.

Mr. Perkins—What per cent. of his customers does Mr. Loomis find it necessary to send collectors to?

Mr. Loomis—As stated in the paper, about one-third of our consumers, using the regular meters, go delinquent, and about one-half of this number pay before the 20th of the month. After that time we send out our inspectors on the balance of the unpaid accounts to give the notice to people personally and make a personal appeal to them.

Mr. Perkins—Do you think inspectors make better collectors than the regular solicitors?

Mr. Loomis—As a matter-of-fact when these inspectors are sent out they are not sent out to collect but simply to notify the consumers to pay their bills. It is not our practice to collect our gas bills. We expect them all to be paid at the office.

Mr. Perkins—You simply invite them to call at the office and pay?

Mr. Loomis—Yes, sir.

The President—On behalf of the Association, Mr. Loomis, I thank you. The next paper is that by Mr. J. Earl King, of the Welsbach Company, Chicago, on the subject of

HIGH CANDLE POWER ILLUMINANTS: GAS VERSUS ELECTRICITY.

It is not my intention in this paper to set forth the various high candle power illuminants which are not allied or closely allied to the gas industry. The object is rather to outline the competition offered by the electric companies through their most recent high candle power lamps for interior illumination.

Before turning our attention to these lamps, it might be well to touch briefly upon the flaming arc, which is essentially an outdoor illuminant, but which is sometimes found employed in interior illumination. This lamp probably produces the highest candle power of any single unit known, but is not suitable for ordinary interior lighting on account of the peculiar quality of the light, its harmful effect upon the eye and its obnoxious odors. Its rated candle power is 1,500. The cost of operation is about 5 cents per hour, figuring current at 10 cents per kilowatt.

The indoor electric arc is a form of competition which has given gas men more or less to think about, but which has been met successfully by the upright gas arc and various types of upright gas clusters and single gas lamps, the difference in cost and value of illumination having been so largely in favor of gas installations. The candle power of the 4½ ampere, 500 watts, indoor electric arc is rated at 500, but the actual candle power is nearer 400. The cost of operating this lamp per hour is 5 cents (current at 10 cents per kw.). The 4-mantle, upright gas arc needs no introduction. It has a nominal candle power of 400, and, for a large unit, has been the standard of gas illumination for about 4 years. The cost of operating this type of gas arc is about 2 cents per hour (gas at $1 per 1,000).

The Nernst electric lamp has been comparatively a small factor as a competitor of gas lighting, its high cost, both for lamp and renewals, being objectionable. The single-glower Nernst lamp is rated at 88 watts per hour, and produces 50-candle power. The cost of operating a single-glower Nernst lamp is 88/100 of a cent per hour, current at 10 cents.

The tantalum lamp, while producing 1-candle power for each 2 watts of current consumed, has not become generally used. The reason for this is that the first cost of the lamp has been high and, the life being only 500 hours, the renewals have been expensive. A 20-candle power tantalum lamp costs $\frac{1}{10}$ of 1 cent per hour to operate, current at 10 cents per kw. The competition furnished by the Nernst and tantalum types of lamp has been successfully met by the ordinary, upright gas arc and lamps.

We now come to the most strenuous competition ever advanced by electricity, namely, tungsten lamps. This lamp, producing 1 candle for each 1¼ watt of current consumed, and having a life rated at 800 hours, has given the electric companies an opportunity to advance the idea that electricity, as consumed through a tungsten lamp, is as economical as gas for lighting. This theory has been advanced during the past summer months, which have been exceptionally warm, by the electric company and its representatives, and a great many consumers have been secured who believed they were going to obtain electric light of a superior quality at a price equivalent to that of gas.

The electric companies generally use many technical terms not fully understood by the customer, and this has resulted in many instances in a confusion in the mind of the customer with reference to

the service and cost of service he was to receive, and owing to this many gas users have been influenced into changing to electric service. As the electric bills for the longer lighting periods are being rendered, some dissatisfaction is being expressed by these former gas users. These actual comparisons are as follows:

For comparative purposes, we select the 4-light, 60-watt tungsten cluster, which is the most popular form of installation. The fixture most generally used in Chicago (and we take Chicago as being our home town) is one containing 4 lamps and equipped with a 20-inch porcelain reflector, an illustration of which appears in the corner of Chart No. 1, showing the light distribution and candle power curves of this fixture. You will note that the maximum candle power, namely, 240, is produced only in one direction, the 45° angle. On the vertical, or directly under the unit, the candle power is only 160. This is the fixture which has given the tungsten lamp its reputation in Chicago.

The fact that the lamps are of higher candle power than the old type carbon filament generally used, and the light of such quality as to confuse and deceive the sense of sight, have made it generally believed that the tungsten is a great light producer. The chart shows the actual lighting value of this style of fixture.

The same lamps equipped with holophane distributing reflectors give us a unit of entirely different appearance and one which, for naked eye comparative purposes, is more equitable. Chart No. 2 shows a sketch of this type of cluster and also the light distribution and candle power curves.

In this instance you will note that the maximum candle power produced is directly beneath the lamp and runs slightly over 600. On an angle of 15° we have about 535 candles, and on an angle of 30°, 350 candles, and on an angle of 45°, 250 candles. The candle power lessens very rapidly as it leaves the vertical and approaches the horizontal, and this is caused by the holophane reflectors being narrow at the bottom and the lamps extending below the lower edge of the reflectors. This cluster is only efficiently beneath the fixture. A new design of reflector is being advocated which gives the distribution, as shown by Chart No. 3. This shows the volume and distribution of light from a fixture equipped with the new design shades and five 60-watt tungsten lamps (consumption 300 watts per hour). You will note that the maximum candle power is produced at about 30° and is only 385. Directly underneath the fixture it is only 277. This from a 5-light cluster is a very poor showing.

The lamps used to produce the candle power, as shown by Charts No. 1 and No. 2, consume 60 watts per hour each, or 4 lamps 240 watts. This makes the cost for current, for one 4-light cluster, $2\frac{4}{10}$ cents per hour. To successfully compete with the tungsten cluster a new inverted gas cluster fixture has been placed on the market. This fixture is a cluster of 2, 3 or 4 inverted gas lamps, arranged on a scientifically designed pendant fixture, operated by a chain-pull, which gives it all of the convenience of electricity. While in appearance it is equally as attractive as the tungsten cluster equipped with holophane reflectors, it is much more pleasing in appearance than that type equipped with 20-inch porcelain reflector, shown on Chart No. 1.

As a light producer, the inverted gas cluster fixture has never been equalled. Chart No. 4 shows the light distribution and candle power curves of the 4-light, inverted gas cluster fixture, equipped with holophane distributing reflectors.

Your attention is called to the maximum candle power which is obtained in one direction (the vertical), namely, 581. You will also note that this curve varies less than 100-candle power over an area of 45°, and still maintains 500 candles at the 45° angle, then running down to 240 candles on the 60° angle. This is conceded to be the finest distribution of artificial illumination ever obtained. The gas consumed in a 4-light, inverted gas cluster is $13\frac{1}{2}$ cubic feet per hour.

Practical tests have been made in Chicago which have proven that the above figures are correct, and we have a number of installations where the fixtures are supplied by individual meters and where these figures can be verified. The cost of operating the 4-light, inverted gas cluster for 1 hour is $1\frac{1}{2}$ cents, with gas at $1 per 1,000.

Chart No. 5 (a composite one) combines and compares Charts No. 1, No. 2 and No. 4, with the addition of a 3-light inverted gas cluster curve. A glance at the chart suffices to show clearly the difference in light distribution effected by the various units. The candle power of the gas cluster in a downward direction is high, and remains practically uniform up to the 45° angle.

While the candle power in the vertical direction of the 4-light tungsten cluster, equipped with holophane reflectors, is slightly higher than that of the 4-light, inverted gas cluster, it diminishes so rapidly at increasing angles as to make it very impracticable for general use. The light distribution of the 4-light tungsten cluster, equipped with porcelain reflector, is much more even, but the maximum candle power is much lower than that of any other of the 3-clusters shown.

The comparative tables on Chart No. 6 show the average lower spherical candle power, the cost per hour and the per candle power of the 4 types of clusters.

It will be noted that the average candle power of the 4-light tungsten cluster, equipped with porcelain reflectors, approaches closely to that of the 3-light, inverted gas cluster, and exceeds that of the 4-light tungsten cluster, equipped with holophane reflectors, in spite of the fact that the maximum candle power of the latter is $2\frac{1}{2}$ times greater.

This is due to the fact that the candle power at the greater angles and approaching the horizontal falls but slightly below the maximum, while at these angles the candle power of the other tungsten cluster, and also the two types of gas clusters, is considerably lower than their respective maximum candle power. For practical purposes, however, the high candle power in the horizontal direction is of little value.

The comparative cost tables are figured on a basis of $1 per 1,000 cubic feet for gas, and 10 cents per kilowatt for electric current. These figures speak for themselves.

While it is quite true great improvements in electric lighting have been made, it is also true that great strides have been made in incandescent gas lighting, and to-day the gas man is just as far ahead of the electric man in the lighting proposition as he was when the comparison was made between the gas arc and the electric arc, or between the single, upright mantle lights and the carbon filament lamps. It is obvious that to underestimate the strength of a competitor is a serious error; it is also obvious that to overestimate this strength shows poor judgment.

The introduction of the competition offered gas lighting by the tungsten electric lamps has caused much uneasiness, and many a gas manager has seen that serious inroads might possibly be made upon his illuminating output if he were obliged to compete with the new electric proposition along the old lines. In fact, the electric companies have, in some localities, secured a considerable increase in sendout at the expense of the illuminating sendout of the gas companies.

The electric cry being "Increased light at less cost," and the gas companies with the old lighting systems having nothing new to offer their customer, either in style of fixture or increased efficiency or illumination, it has not been particularly hard to convince a consumer sufficiently to secure the business for the electric company. A new lighting device always finds a following, and if it is of special merit it soon has a large patronage, and almost any gas lighting system favored and promoted by a gas company will be taken up readily by the public, the public's experience being that the gas company wishes to give the most light for the least cost.

As the electric proposition is new it naturally follows that, unless something new is offered in competition, it will secure a considerable following which it would not be able to obtain if the gas lighting offered in its stead is of the up-to-date order and gives increased illumination at a decreased cost. Gas men realizing this, have always adopted new devices of merit, even if the new appliance reduced the output of their product temporarily.

I might state here, if any of you wish to ask any questions about the curves represented on Chart No. 5, I should like you to ask them now, as it would be difficult to put the chart in place after it is removed.

Mr. Ott—How close to the lamp do you make these tests?

Mr. King—These tests are exactly at the lighting point of both the tungsten and the gas lamp. As you get away from that point the candle power diminishes.

Discussion.

The President—This very interesting paper is particularly interesting at this time, or when the tungsten lamp is being exploited as our competitor. Mr. King has made investigations and collected data that very clearly tell us the comparative costs of these various lights, and I trust that his efforts will be appreciated by your indulging in a free and full discussion of this paper. Will Mr. Clark, of Paris, Ills., please talk to us on this subject.

Mr. Clark—I came here entirely as a stranger, discovering the meeting in progress, and I certainly came in well prepared to learn or to

pick up large chunks of information here, and I have not been disappointed. I feel I am rather imposing upon the Indiana convention by coming in without any introduction at all. But these questions appeal to some classes of companies in different ways, and put us in a quandary as to what is best to do. For instance, my company sells both gas and electric current, and these questions have been uppermost in our minds for some time: "Whether to exploit the Welsbach cluster, which is shown here, or whether to push the tungsten lamp." In the last few months we have been better able to exploit the tungsten lamp, the cluster, than the gas appliances. I have myself been pretty well aware of the fact that all the arguments of economy as to the number of candle hours for a given cost favored the Welsbach cluster and the inverted arc gas lamp. I am very sure I can give this august assembly no new ideas on the subject at all, but I wish to express my pleasure in attending this convention and the satisfaction I have had in hearing the papers.

The Secretary—Can Mr. King enlighten us at all upon the question as to what advantages are claimed at Chicago by the tungsten representatives for their lamp and upon what terms they are there putting out the tungsten lamps. That would be an interesting topic, I think, for all of us.

Mr. C. H. Graf—I would like to inquire whether in putting up these clusters they are subjected to the same maintenance that is given to arc lamps. I made the statement a great many times that if we had to put out a gas arc without maintenance, I would prefer not to put it out. From what I have seen of the clusters I think they require about as much attention as an arc lamp, and that if not given the necessary attention they are bound to be failures. I would like to know what they do in Chicago in regard to this.

The President—A question I wish to ask is: You state that the life of a tungsten lamp is 800 hours. Is this the average life of lamps in good service, or does it include the life of those lamps which frequently break within 10 hours after installation? Mr. Dykeman, have you anything to offer?

Mr. Dykeman—No, sir. I am working for a combination company, gas and electric, and our sales are rather greater in the electric end of it. We have been very successful with the inverted gas arcs. We have not sent out any of the Welsbach clusters, but if we did it is my opinion they should be maintained with the assiduity and zeal with which the arc lamps are maintained; otherwise they would deteriorate in the hands of the consumers who would not keep them up and they would come back to the company as poor installation.

Mr. Moncrieff—An advantage the tungsten cluster has over the gas arc is, we do not have to maintain them. We must maintain the arc and the arc cluster to give satisfactory results.

Mr. Barnes—I am not in the electric light business, so, of course, I think that gas is the very best thing to use, and in our little city the electric light company, I am sorry to say, are not doing very much and cannot do very much under their equipment, so that we practically have the upper hand at present. But I think any form of incandescent lighting properly maintained yields a good light. The only thing they can say against the light is the heat. In the southern parts of the State we have quite warm summers, and it is pretty warm when the lights are going, and the heat is somewhat objected to. Of course, we do not talk it, but the electric light people do it for us. As far as candle power is concerned, I do not think anybody can say anything else than that we give more candle power for less money than our competitors.

The Chairman—Gentlemen, are there any other questions? If there are not, I shall ask Mr. King to close the discussion.

Mr. King—Regarding the arguments advanced by the electric company in Chicago in favor of the tungsten lamp, the heat has been the strongest argument they had this summer, and they have worked it vigorously. As a matter of fact, the difference in the temperature of a room, with reasonable ventilation, taken at the height of a man's head, the room being lighted by inverted gas lamps or by tungsten lamps, and the number of lamps being equal, is very little. In fact, with proper ventilation a thermometer would show a lower temperature at the height of a man's head in a gas lighted store than it would in an electric lighted store. Those tests have been made, and this fact has been found to be true; but if you talk gas lighting to a man it is considerable of a proposition to convince him that gas lighting is as cool as electric lighting. Nevertheless it remains a fact, and it is really quite a little cooler. The terms on which the tungsten lamp are put out on in Chicago are very liberal. The Company instals the cluster and necessary wiring on a flat rate charge, $1 for a 4-light cluster, a 60-watt lamp cluster with a 20-inch porcelain reflector; then there is a weekly charge of $1.50. That includes current, installation and upkeep, and the service is from dusk in the evening until 12 o'clock. That varies slightly for service until 10 o'clock or to 1 o'clock; but for 6 hours, from dusk until 12 o'clock, it is $1.50 per week, $78 a year, including installation, upkeep and current per cluster—a 4-light cluster. They also instal that fixture on a basis of $1.50 per month rental, the current to be paid for as shown by the meter. That includes fixtures, wiring and maintenance, and the customer pays for his current at the regular Chicago rates, with which you are probably all familiar, 12 cents for the first hour and 7 cents for each additional hour per day. We believe in maintenance on gas lamps. We do not put anything out, if we can help it, without maintenance. The 4-light, inverted cluster we put out on a payment plan. We have two methods of putting it out, one of which has been in operation about 4 months, the other we put into operation recently. The original plan was on a 4-light cluster, the customer paying $5 down and $1.90 per month for 11 months, making the fixture cost for the first year $25.90, including upkeep. This, figuring gas at 85 cents per 1,000, which is our Chicago rate, made the cost very much less than the rate and operation of the Electric Company, and at the end of the year the customer owns the fixture, which, in the case of the electric lamp, belongs to the Company. One new plan that we recently put in operation provides for a smaller weekly payment. We put a 2-light fixture out on a yearly contract—by-the-way, I might say that, on our original plan, we supplied weekly maintenance, our men made weekly visits, at which the glassware was cleaned and needed repairs were put on. Under this new plan we are inspecting every 2 weeks, and with the 2-light fixture we make the installation at the rate of 27 cents per week. Those payments are due every 2 weeks; in other words, when the salesman takes the order he collects for the first 2 weeks, which would be 54 cents as an installation charge for the 2-light fixture; then, when our maintenance man makes his visits every 2 weeks, he collects 54 cents. At the end of the year the customer owns his fixture. On a 2-year contract a 2-light fixture costs at the rate of 17 cents per week, which is a very low installation charge, and at the end of 2 years the man has paid 34 cents every 2 weeks and owns his fixture. However, we only make this contract with people who are absolutely responsible and have commercial standing. The contract provides that in the event of their failing to make payments when due, thereupon the entire amount is due and payable, including any charge there may be for maintenance up to the end of the unexpired period, and we propose to collect that in case anyone fails to make his payments, so we are really reasonably certain we are going to get the payments for the 2 years. I simply quoted the price on the 2-light fixture. We put a 3 and 4 light fixture out on the same plan. The 2-year contract for the 3-light is 22 cents a week, and on the 4-light fixture 27 cents a week. The rated life of the tungsten lamp is 800 hours. We find that 600 hours is about the average life. That, of course, includes lamps broken when they are first put up. The maintenance, of course, on the renewals of these tungsten lamps is very much more expensive than renewals on mantle lights. I believe in Chicago we can renew 60-watt tungstens at $1.25. It is possible to get them for slightly less than that if you know how, but the regular rate is $1.25.

Mr. Rowland—Before Mr. King closes the discussion I would like to ask a question. After the consumer purchases the cluster lamps, the tungsten or the inverted gas arc, does the company continue to maintain these lamps?

Mr. King—In selling our lamps for cash, or on this payment plan, we maintain them for a fixed amount. We charge 20 cents per month per lamp, or, for our inverted lamp, that would be for 4 lights, 80 cents per month, or $9.60 per year. The electric companies only maintain their cluster on a flat rate basis, on a rental basis of $1.50 per month, as far as I know. A man putting in one of our fixtures on a 1 or 2-year contract at the end of that period would be glad to accept his maintenance on the fixture at our regular rates, as we can show quite a substantial profit on 20 cents per month per lamp.

The President—What is the minimum gas pressure you consider sufficient to properly work the installation of gas mantles; for instance, you can get more pressure at 4 inches than you can at 2 inches. What would you consider the minimum working pressure?

Mr. King—Two inches, I should say.

The President—What is the difference in the light obtained, say, between 2 and 5 inches?

Mr. King—I am not prepared to answer that. The increased pressure would naturally increase the candle power; in just what percentage, however, I am not prepared to say.

The President—Would you then consider a 2-inch minimum commercially sufficient?

Mr. King—Yes; 2 inches is all right.

Mr Kellum—Supplementing Mr. King's remarks I might add that the selling prices quoted by him for the inverted cluster fixtures include the selling expense and also provide for quite a substantial profit. Gas companies usually work on a plan which returns actual cost for appliances installed by them, consequently the prices quoted would be governed by different local conditions, and in the majority of instances would be considerably reduced.

The President—Mr. King, on behalf of the Association, I thank you. We will now have the paper by Mr. C. S. Rowland, on

THE MARKETING OF COKE LOCALLY.

[For the text of the Rowland paper, see *ante*, March 1, 1909, p. 363.]

Discussion.

The President—Gentlemen, the paper of Mr. Rowland is before you for discussion.

Mr. Ott—We sell readily all the coke we make at Rochester. Our method of handling coke is perhaps original; that is, I don't know whether any other companies do the same. Instead of weighing it out we have a bed on the wagon that holds just 50 bushels. No matter what the season, summer or winter, the customer knows he gets a ton of coke and that satisfies him. I have made tests as to the weight of coke. In the summer season they do not get quite 2,000 pounds; but at this time of year they get over 2,000 pounds. The first year we had some fault found in regard to the weight. They could see the difference; but since we measure it out we have had no trouble whatever. We also have a bed subdivided into bins, so that if they order ½ ton they get 25 bushels; if ¼ ton, they get 12½ bushels. We get $5 a ton for delivery inside the corporation. I would like to ask what other companies are getting for coke. We dispose of every bit of our coke locally. That is what we are after. We sell the coke as we get it from the retort, after crushing it.

Mr. Parker—Selling coke is like selling everything else. It is up to the man behind the gun. Some gas companies do not sell coke; people just buy it from them. To illustrate that further: Two old darkies were selling hot popcorn in Washington, each on opposite corners. The southern darkey was shouting, "Gentlemen, here is the place to find your hot corn." Every time he said that, the other darkey would reply, "Here, too." [Laughter.] That is the way it is with the coke proposition. A lot of gas companies push coke in every possible way and their coke piles are down, and the other gas company is howling, "Here, too." That is about as good a comparison as I can make. There is a market for coke, but you will have to work it. [Applause.]

The Secretary—In connection with advertising coke I will say that at the end of the room, near Mr. Parker, is a copy of an advertisement which we are placing in the Indianapolis papers. This theme was suggested by our Mr. Graf, who can give us useful information on the more wholesome methods of marketing coke.

Mr. C. H. Graf—This is a subject I am full of. I think the importance of Mr. Rowland's paper is not fully appreciated by the members present. I want to emphasize the word "locally." I believe it is the duty of every gas company to sell all its coke locally, just as the gas is sold. I do not doubt that every one in the room has been troubled more or less by competition with outside products. I say there is no necessity in selling that coke in any way but locally. Sell it in your own market and let the other fellow's market alone. I have been connected with a great many companies in my time, and in quite a number of them the coke was either being sold by contract and shipped out of town or possibly sold in large quantities to single manufacturers. On the line suggested by Mr. Rowland, of educating the consumer by a low price, delivering in small quantities and instructing the consumer so that the coke will be burned properly, I will say it has always brought about satisfactory results. You sell coke to the average man who has never used it for his furnace without any instructions and he will condemn it. Coke cannot be burned as you would burn soft coal or anthracite. We have one of the best heating agents there is on the market in coke. I think the University of Michigan made some tests which showed conclusively that the heat units in coke a pound are equivalent to 15 more in a pound than the heat units in a pound of anthracite coal. As to selling coke at $5 a ton, I do not believe that price is high enough. It depends on the market, of course. But with anthracite coal selling, as it does in this territory, anywhere from $7.50 to $8 a ton, we surely ought to get within 20 per cent. of that price for coke. Another thing I want to mention that will assist in selling coke, is a coke burner that is now on the market to be used in connection with gas ranges. We were something in doubt as to how this little apparatus would take; but, so far, our sales have been very satisfactory, and we have quite decided that next spring we will push this particular article. Of course this burner is not restricted to the use of coke. It will burn soft coal if properly constructed. But having the coke for sale, we can easily increase our coke sales by pushing this burner.

Mr. Yorke—Would not the gas company be its own competitor in selling fuel; also, how much would these coke burners interfere with the sale of gas? Are they not creating competition that is not wholesome competition?

Mr. Graf—I do not think that we are. Of course, if you can't sell the consumer a gas range to use gas he had better try some of the coke. This burner I spoke about does not interfere with the gas range at all. It is simply there in the winter time to keep the kitchen warm—one objection to the use of the gas range in the winter is that it will not keep the kitchen warm. But having this little coke burner the consumer can do a small amount of cooking and it keeps the kitchen warm, also acting in the way of a garbage burner. All the refuse paper and garbage can be put in this coke burner and burned up. I do not think the coke so used would interfere with the sale of gas. The bulk of the coke in Indianapolis is sold for furnace purposes, house heating and store heating.

Mr. Ott—As to the sale of coke I would like to state, as the other gentleman did, that I think the thing for a gas company to do is to talk coke thoroughly. A person used to burning hard coal, before you can switch him over to soft coal, has to be taught how to burn it; that is the way with coke. All my office people are educated to the point that if anyone comes in to buy coke the proper use thereof is explained right there. We put out a little pamphlet carrying instructions to the consumers. We very rarely have a person discard coke after trying it.

Mr. Parker—The last speaker has the correct idea. It is a question of educating the people to burn coke. The average man does not know how to burn it. It is just as necessary to educate him in that direction as it is to teach him how to use gas. If you will follow up that system and where you sell the winter supply of coke, instructing the janitor or the person who has charge of the furnace, you will have no trouble. There is absolutely no question about the efficiency of coke if handled properly. I find many gas companies have a working agreement with coal companies that take all the supply of coke from the gas company, and they push its sale. It is absolutely a question of education. You cannot burn coke if you do not know how to handle it in the furnace or base heater. I am satisfied a great many more people would use coke if they knew how to handle it. The city of Spokane has coke wagons, with the drivers dressed in white suits, to show the absolute cleanliness of the coke. It is the greatest advertisement I ever saw. The idea of delivering coke with white suits on the deliverers!

The Secretary—In connection with the coke burner mentioned by Mr. Graf I will just say that Mrs. Hawkins, who probably has been in more kitchens in the city of Indianapolis than any of us, is of the opinion that fully 75 per cent. of these kitchens are not supplied with any heat and that, therefore, if they want to use gas ranges, the kitchen heater or coke attachment would be most acceptable. We ought to emphasize the importance of introducing the coke attachment during the summer months, so that, when the fall and winter seasons begin, we may commence to sell our coke to those who have the heater to burn it in.

Mr. Davis—As to educating people how to burn coke, I find, in talking coke to my friends, time after time they have told me that the coke was all right. It made a beautiful fire but they couldn't keep it over night. That is because coke does not clinker together but stays separated, thus allowing the draught to pass through the furnace. It all burns up before morning, and no doubt it is a very disagreeable thing to get up on a cold winter morning and find the furnace fire out. If we could impress on the people that, instead of shaking down their fire when they fix it at night, if they will just let their ashes lie on the furnace grate so that the draught cannot get through, all they will have to do in the morning is to shake down the furnace and put on fresh fuel.

The President—Mr. Rowland will close the discussion. I wish to agree most heartily with Mr. Graf in what he has said about marketing coke locally. It seems to me we ought to develop within our own territory the possibilities and the demand that properly belong there. I was very much impressed with this same thing 3 or 4 years ago.

One of our good local customers informed us that he could obtain coke from Louisville from agents who sold the product of the Cincinnati Gas Company at a very much lower figure than that at which we were selling it to him, and at the same time our own Company was engaged in disposing of its own surplus coke to agents in the Cincinnati market, and for all we knew our coke was being shipped to Cincinnati and Cincinnati coke was being shipped to New Albany. That coke was probably sold in each instance at a sacrifice. We sold it away down to a foreign competitor thinking that if we would load on to him our own coke we would not hurt our local market. Probably not, but we were injuring somebody else's local market, in which way we might just as well have sold our coke at home at the very low price at which we sold it to people away from home, excepting, of course, the difference in price would be noticeable; so that the coke is shipped around the country from one point to another and the railroads are the only benefited parties. It seems to me there is a great field to develop the markets in our respective territories. I do not know what is the proper price to charge. Mr. Graf says $5 is not enough. With us, where we get coal cheaper than Mr. Graf obtains his coal, and where our citizens use soft coal mostly, I think $5 would be an excessive price. At any rate we would be very well off indeed if we could sell our coke a sum less than $5.

Mr. Rowland—In answer to Mr. Ott's question, as to the average price obtained for coke, I might say that, as far as my knowledge goes, the average price through Indiana will range from $3 to $5.50. The conditions are such in Indiana that many companies have found that soft coal is a strong competitor in the fuel line and have made low prices to compete with it. If the management of gas companies will devote time as industriously to selling coke as they do to selling gas for fuel purposes, I believe that prices will become more satisfactory. As it is, we are only really in competition with hard coal, and I do not think any company is selling coke at hard coal prices, and yet we get as much pure carbon out of coke as we do out of hard coal; the only real disadvantage is storage. The competition I do not think enters into it. Our solicitors devote their services to the development of gas for fuel and lighting purposes, and that is the only interference we have with devoting the solicitor's time to the education of our coke customers. If the same time were devoted to a coke customer that is devoted to a gas customer it would complete the work. It would only have to be done once. You will find, in gas range installation, that when a gas range is sold some companies consider the obligation ceases, and I venture to think there are a great many people in the community using gas ranges who do not thoroughly understand all of the advantages their ranges possess and how to get the very best results in their cooking. I think the professional demonstrators of ranges have brought out that fact clearly to every gas manager that has utilized those services. The same might be said of the coke customer. If we will have our solicitors instruct the consumers so they thoroughly understand the method of firing coke to where it will hold the fire over night, he will obtain a satisfied consumer, who will require no further attention for a long time to come. I might add to Mr. Davis' suggestion, of leaving the ashes unshaken on the grate for retaining the fire over night, that a little coke breeze added to the fuel, spread over the top of the fuel at night, will also assist in holding the fire. The coke breeze is something the gas companies are very anxious to sell. Another advantage was brought out by Mr. Graf and Mr. Eves. I think the experience of a great many gas companies is that they have purely a summer business for the gas range, and October sees a great many meters and gas ranges removed; but if we devote a little time to educating that class of patronage to the use of the range throughout the winter, by the addition of a small coke heating device which some of the manufacturers are now putting on the market, and which Mr. Graf and Mr. Eves believe is perfectly practicable, by introducing this device into the kitchen, we will have a gas fuel customer the year round, instead of 6 or 7 months, and with that you will find an additional market for your coke. Crushed coke can go very nicely in those heaters. They will answer for garbage burners as well as heaters. I might state in this connection that if any of the gentlemen who are not familiar with the heater will visit the store of the gas company in this city they will find those heaters on exhibition and will have an excellent opportunity to see them. The thing is to keep the coke in the kitchen in the winter instead of soft or hard coal for heating purposes, and you have a double outlet for your product. [Applause.]

Mr. Parker—I would like to ask Mr. Eves what he gets for the coke attachment.

The Secretary—We are selling the coke attachment now for $9.50 delivered and $10.50 on payments. We are taking easy payments in some cases, accepting $2 down, and $2 per month, putting on the extra dollar to cover the long-period plan. We are also undertaking to furnish a chimney-connecting pipe and elbows for $1. That seems to cover all our expenses on the proposition and helps us to get in a large number of houses.

Mr. Parker—Has that coke attachment a gas burner underneath to kindle the coke?

The Secretary—We have one with that burner.

Mr. Parker—Is that the best seller?

The Secretary—Not at all. The combination gas burner underneath the coke attachment will not be of very great value for the reason that every woman wants to keep the fire in over night and, therefore, it will be very few times the fire will have to be kindled. Breakfast can thus be cooked in a warm kitchen the next morning.

Mr. Parker—You are able to keep fire over night with the coke attachment?

The Secretary—In the majority of cases I believe they do.

Mr. Parker—It has a small firebox to do that. The reason I am asking this is that the coke attachment has been on the market for several years, but it is a local condition in Indiana entirely. Manufacturers are anxious to make any appliance that the gas companies need and require and we try to keep abreast of the times. I was much surprised last year when I got over to Peru and found that my friend Dolley over there was having a great sale on coke attachments. I took it up with the house, and in the meantime got in touch with the gas manufacturers over the country, with the result that our investigation has not warranted us in making a coke attachment. We have got a sample of every coke attachment we could find ready to make it when there is a demand. I am very glad to know of the success of it here in Indiana. It is entirely a local condition. Several gas manufacturers have told us they find it cuts their gas range consumption in two. They do half their cooking on it. Of course, they can't do baking, but the average family don't do much baking; they buy bakers' bread, so we have got that to contend with. But if this becomes contagious we are ready to make a coke attachment. I hope it will be. That is the reason I am asking Mr. Eves about it. I will make the trip to examine his coke attachment.

Mr. Oviatt—The gentleman who just spoke is mistaken about the coke attachment being used only in Indiana. It is extensively used in the East. As to competition with the gas company we found, in calling on a lady who was using the coke attachment, that she was doing her entire cooking on the coke attachment, and our gas manufacturers seemed to think there was a chance for an argument right there. It is a fact that the coke attachment is a great help, but it will curtail a certain amount of gas consumption. People will heat their water with the coke attachment and also will keep the washboiler on it on washday all morning.

Mr. Draper—It is a question in my m ind whether it is not better to have the coke attachment with the two burners on beside the gas range in the kitchen than to have a coal range with six holes on top. That is the question we must take up. To maintain the gas ranges is one of the problems before the gas people of the country to-day and the object of manufacturing the coke burner, as I understand it, is to enable the housewife to have something whereby she can burn the sweepings from the floor and accumulations in the way of sacks and newspapers, etc., as well as the garbage. It is true there are two burners on the top of a coke heater where there can be more or less work done, but to eliminate the coal range from the kitchen and have a year-round gas range consumption I believe is the main object of the coke heater, and I believe it comes nearer to solving the question than anything else. I will add, for the benefit of the Association, that we manufacture a coke heater with a gas attachment for kindling, but you will note when you see the gas heater that that is optional with the gas company or the seller or buyer. You can connect if you like with the gas kindler or use the heater without. This rests wholly with the judgment of the gas company. If I were to construct another one, for the benefit of anyone who wishes to construct a coke heater, I have a suggestion to make. When natural gas was getting low I built a combination hard coal, coke, soft coal or any kind of hard fuel stove, the gas burner being immediately under the bottom of the fire bowl. This little device enabled people to use what natural gas they had, and at the same time use coal without any change.

Mr. Rowland—The time when we made coal gas only, I advocated the selling of air tight stoves, wood stoves, for the kitchen, so as to keep that gas range working both winter and summer, and I think

the gas man who says that part of the cooking or the ironing or the washing is done on a coke heater is standing in his own light. It is far better to get half the bill through the winter than to get nothing and have the gas range taken out and a coal range put in its place. That is the attitude I think the coke device stands in. It gives the gas manufacturer a chance to keep the gas range going and also gives an outlet for the coke.

Mr. Parker—This condition is only temporary. Every house in the next few years will be heated by gas. Gas is to be the fuel. I don't suppose there is a house being built in Indianapolis to-day that there is not some arrangement for heating the kitchen.

The Secretary—Many houses are being built without any heating arrangements at all.

Mr. C. H. Graf—All of us know that the public attitude on this question is very favorable to the future sale of the coke heater.

Mr. Barnes—Mr. Parker seems to think that the coke heater is local in Indiana only, or nearly so. I can say for his benefit that the Company I was connected with in the northern part of Michigan sold over 500 coke heaters in the season of 1908; also, in regard to the furnaces. I have lived in two different houses that had furnaces in them and neither one of the furnaces would heat the kitchen.

The President—I am very sure we are all very thankful to Mr. Rowland for preparing this paper. The Secretary has an announcement to make.

To be Photographed.

The Secretary—Gentlemen, we propose to publish our Proceedings. In order that we may have the Proceedings complete, we ought to have a photograph of our Association. Arrangements have been made for this photograph. The cost of it is not very great, but we propose to have them in the panoramic style. While the Association will not be asked to take any copies at all any member can have a copy for $1. I propose that we go at once and have our pictures taken by the famous monument, which is only square away.

The President—Gentlemen, you have heard the suggestion of the Secretary. [Seconded and adopted.]

An adjournment, to reassemble at 2:30 P.M., was ordered.

(To be Continued.)

[Official-Report.]

PROGEEDINGS, FIRST ANNUAL MEETING, SOUTHERN GAS ASSOCIATION.

Held in the Claypool Hotel, New Orleans, La., Feb. 18, 19 and 20.

First Day—Morning Session.

The Convention was called to order at 11 A.M., by President Miller, who prefaced his introduction of Mayor Behrman by saying: Gentlemen, it has been customary for Gas Associations of this kind, on arriving at a city, to have the Mayor welcome them and extend to them the hospitality of the city; in fact, sometimes we have been presented the keys of the city. I do not believe that Mayor Behrman is going to throw any flowers at you. They grow too easily down here and are not considered such a favor. As far as presenting to you the keys of the city is concerned, I am satisfied he won't, because there is no need for it—the town is wide open anyhow. I present to you, Mayor Behrman, of New Orleans.

Welcomed by the Mayor.

Gentlemen of the Southern Gas Association: I congratulate you on the representative body assembled here this morning. The bringing together of men in the same business has a wonderful effect for the betterment of that particular business for which the Association is formed, and I am quite sure that the Association which has met in convention here to-day is no exception to the rule. Gas *is one* of the luxuries to the people of the South, and right down here in Louisiana, my friends, there is a production of natural gas that must, sooner or later, command the attention, not only of the people of the Southern country, but the people of the nation, for we believe—and you will agree with us—the cheaper we can put gas on the market the better it is for all concerned. I am quite sure that every man here to-day—that no one would want to see anybody in a business where he could not make a profit—would gladly and willingly reduce the price of gas, provided it could be sold at a price commensurate with a fair profit on the capital invested. But I am not here to talk business, and I am here to extend to you a hearty welcome to this city, famed all over the country for its hospitality. I am glad to see you here, at this time especially, when we practically give over business to gaiety. As your President has told you, I cannot give you the keys of the city, because they have been promised to old "King Rex," who arrives Monday, and I must, under fear of the ban of exclusion from the city, turn over to him our keys. But I am quite sure, though, knowing Rex as I do, that he will not turn the lock on any of the delegates assembled here to-day. So, until Monday my friends, the city is yours. I shall exert every influence I can command with his Royal Highness, and shall ask him to give you the full entrée to and about our city. I hope your deliberations will be successful, that your coming together will bring about the results which you wish to attain, and that you will come again; for that you will like our city, I have no doubt. Your entertainment is in the hands of a competent Committee who have looked after all the details and will see that you have a good time. I assure you that it is a delight to me and to the people I represent, to have you with us to-day, and in their name I extend to you a most hearty welcome.

The President—It is proper that some member of this Association who is a visitor to the city, should acknowledge the very cordial welcome extended to us. I do not know of any other one who can present more surprises to us, with his nice Methodist-minister expression, than our friend who is a candidate for the next meeting at Chattanooga, Mr. J. R. Huntting.

Response of Mr. Huntting.

Mr. Mayor—We are very much impressed with and deeply grateful for this cordial welcome to your beautiful and famous city, and we thank you from the bottom of our hearts for your kind words. We are indeed glad to be here, for all have been anticipating the pleasure of this visit for a long time. Those of us who have never been in the wonderful place have been induced to come by the reports that have spread to us from those who have had this happiness before, and they hasten to repeat the joy. Pardon the speaker for saying that he has been in nearly every important city of this great and glorious country, from New York to San Francisco, and from Duluth to Galveston, and in all my travels I have always said, up to this time, "See New York before you die," but to *myself* these many years, I have been saying, "See New Orleans before you die," and I have taken the advantage of the first opportunity to come, and now I shall keep saying, not only to myself but to my friends, "See New Orleans again before you die." The speaker, together with all the other members of the Southern Gas Association, now for the first time within your hospitable gates, find all our expectations more than realized, and we thank you most sincerely for your words of welcome. We accept the freedom of the city in the spirit it is given, until we shall surrender the keys to "Rex," whose willing subjects we will then become. You have said, Mr. Mayor, that you would like to see in your beloved city cheaper gas and lower prices, both for illumination and fuel. We say, sir, that gas at any price is cheaper, better and brighter for illumination, and answers the purpose for fuel for any place where heat is required, better than any other illuminant or fuel, though delivered upon your premises free of charge, and although, somewhere in the Pelican State, natural gas may be found in sufficient quantities to be conveyed to your Queenly City, until then, sir, be assured that you are getting more for your money from your present Gas Company than for any other product in this city. All important industries and public utility companies have much to contend with in the South as elsewhere, and we are gathered here in convention to study the best ways and means of bringing our product to your people at the lowest price with highest results. With our product, our beautiful South is enabled to manufacture its own products at less cost than to ship them to the New England mills and then buy them back at a greatly enhanced price. With our gas you not only manufacture the products of this country on your own soil for your own use, but for your reward you have the profit that comes from exporting the manufactured rather than the raw material. Therefore, Mr. Mayor, we wish to make it emphatically understood that we consider that New Orleans business men and manufacturers cannot afford *not* to use our product, whatever its price may be, although other fuel may be delivered at your doors at a very low price or even free, and it shall be our endeavor to increase the efficiency and reduce the price of our commodity as fast as conditions of manufacture will permit.

The President—Owing to some mishap on the railroad, our Vice-President, Secretary and Members of our Board are not here. I do not deem it wise to delay the meeting any longer. What is your

pleasure with regard to continuing this session. We are absolutely without any information with regard to the gentlemen I refer to. Shall we continue the session, or, temporarily, adjourn?

It was agreed to bring forward the reading of the

PRESIDENT'S ADDRESS,

which Mr. Miller read as follows:

Gentlemen of the Association: Pursuing a long-established and time-honored custom with bodies of this character, as President of the Southern Gas Association, I am about to discharge the duty of presenting to you the thoughts that seem to me most appropriate at the opening of the first annual meeting of this Association, as a President's address.

There is little chance for retrospection, so far as the affairs of this Association are concerned. Those who were interested enough in its formation, to participate in its first meeting at Atlanta last May, have continued to devote themselves to the welfare and promotion of its interests and for the purpose of making this meeting a success. Having such a limited past, let us hope that we will have an ample future. In this connection, I am constrained to relate an incident of a rather piquant correspondence which passed between the President of a little lumber railroad up in Michigan and the President of one of the Eastern trunk lines, in which the President of the latter declined to exchange annual passes with the President of the former, because he found the little lumber road was about 10 mile slong, while his road was 800 miles long. The facetious President of the little lumber road very politely replied that "It was true his road was not as long; but it was just as wide." So let us hope that while the length of our career is so limited that our gauge is just as broad as any other association and we will have a past after a while.

My conception of the province of this Association is that its special work should be along lines of peculiar interest to the Southern gas man and the interests we represent. The gas industry has experienced very marked changes in this country in every respect in the last 30 years, and if you will carefully study the records of this advancement, you will find that the gas associations have been the academies of the education which has brought these changes about. I would not be understood as saying that only those who participated in the affairs of the associations have advanced, but I do wish to emphasize, what I believe to be incontestable, that the best has emanated from the associations. There are many reasons outside of the specific papers and discussions which come up in our meetings why one should attend these meetings. Be his talent ever so great, a man cannot become a finished artist if he works alone. It is necessary for him to get into an artistic atmosphere to develop these talents. For one to become a finished artist in the gas business, it is necessary for him to get into an atmosphere conducive to that refinement.

I do not desire to attempt to justify this meeting here to-day. The work before us and the manner in which we accomplish it will do that. The subjects selected for papers at this meeting are subjects that presented themselves as being of interest to one or more members of the Association. It is but natural that what interests one of us will directly or indirectly interest the others.

A glance at the programme of papers to be read is a challenge to any contradiction to this statement, and while all the subjects affecting the gas business are not specifically outlined, it would be quite difficult for one to discuss exhaustively all of the subjects here presented without touching, in a more or less vital way, every part of our business as we know it to-day. If it be coal gas under consideration, what more vital subject could be profitably discussed than the raw product from which the gas is to be made; its quality, source of supply, ease of transportation, and the disposal of by-products? On the other hand, if it be carburetted water gas to which your attention is turned, what element in its manufacture is more important than a careful consideration for the oil available for the purpose? In the consideration of even these two items, how would a careful and exhaustive study be made without the laboratory, which is to-day a necessity in the successful operation of a gas plant?

One of the most prolific sources of economy is increase in sales, which is to be obtained by a great variety of methods adopted to suit conditions in each locality, for what might fail in one city might prove most successful in another. The successful prosecution of a "New Business Department" cannot all be done by the canvasser, the solicitor and judicious advertising. They must be supported by a wise public policy on the part of the management, which is calculated to inspire confidence in that management and the enlisting of the goodwill of the community.

We have been made familiar in the past few years with the general statement that gas is much cheaper in England and on the Continent than it is in this country. A careful investigation of the conditions existing there shows that in the last decade the tendency in Europe has been, and is to-day, toward cheaper priced gas and lower quality. The tendency of this country has been, and is, cheaper price and higher quality. The gas men of this country have to a certain extent met this paradoxic condition with a degree of success worthy of commendation, for to-day a better gas is being sent out at a price below what gas of an inferior quality cost 20 years ago. This has been made possible by men to whose class you belong and whose places the younger generation must fill. In taking over your inheritance look well over the field at what has been accomplished and prepare for still greater things, for they will be demanded of you. Gas has the call to-day as being the most popular single article in domestic economy, and is becoming more necessary each year in the household, in the varied industries and in the arts and sciences.

The President—In pursuance of a custom established last October at the meeting of the American Gas Institute, by Dr. A. C. Humphreys, President of the Institute, who rose, for the first time in the history of the Gas Association, to read his address without calling on the Vice-President to take the Chair. You will notice I availed myself of the precedent this morning, in the absence of the Vice-President. I have neglected to announce that, temporarily, Mr. Redding will act as Secretary. He is in touch with all the affairs of the Association and I have appointed him as Acting Secretary until Secretary Ferrier's arrival. I will now ask him to read

THE TENTATIVE PROGRAMME

which we have outlined 2 or 3 weeks since, but have been unable to entirely perfect, because of our inability to get a board meeting. It is simply to indicate what we expect to do.

The Secretary *pro tem.* thus outlined the programme: In the way of entertainment nothing is provided this afternoon, because one of the Carnival parades takes place at 8 o'clock, which will last, probably, an hour. Those who desire to go to the theater will be able to go, as the curtains will not rise until the parade has passed. To-morrow the morning session will open at 10 o'clock and last until 12:30; the afternoon session will consist of a trolley ride which will occupy the time from about 2:30 to about 5:30. At the corner of Canal and Camp streets two cars will be ready to take those who care to go. All of those wearing badges will be admitted on the cars—the ladies also. One or two guides will be on the cars to explain any points of interest we may pass. We will visit the Audubon, West End and City Parks. The route may be changed a little, but we will probably visit those points. To-morrow evening, at 8 o'clock, the banquet will be given in this room; for the ladies a theater party is provided at the Orpheum. The ladies will be placed in charge of a chaperon, who will look after them, taking them to and from the theater. Tickets to the banquet will be $5. Saturday the session will be from 10:30 A.M. to 12:30 P.M. The entertainment will consist of seeing the harbor from one of the steamers, which will be provided. What steamer it will be I do not know as yet. On this boat lunch and refreshments will be furnished. The trip will probably last 2 or 3 hours and will give you a complete view of the harbor of New Orleans.

The President In the continued absence of our executives, perhaps a question or two might be asked or answered, or perhaps a reminiscence might be narrated.

Mr. Huntting If I had been asked to read a paper and had the choice of the subject, I would have chosen one very near to my heart. I would like to speak about it, although I have written nothing.

A Voice—We can stand it if you can.

MR. HUNTTING'S NARRATIVE.

Mr. Huntting—It will fill in the gap, and as it is a question I would like answered, and I will ask the question and then answer it, as far as my experience goes, and would like to know then what the rest of the members think on the subject. I once heard a great leader in our work say, when one after another of his managers were bringing in excuses as to why they were not bringing in results in each of their special territories, that they were all exactly alike; that the difficulties were no greater in one district or State or city than in another. I am sure what he meant by that was that one part of the State or country or city had some great difficulty to contend with that the others did not have, so that they were all about even on that proposition. That while it was not the same thing, perhaps, it was something just as

hard to contend with. The first thing, in fact the hardest thing I found to contend with in the State in which I am permitted to labor at this time, is the servant or help question. I have contended with that where the help has been of every known description—white and black, Swedes, Norwegians, Danes, Germans, and not the easiest of all, our native population of white people, in getting them to use gas for cooking. When we come to the States where the entire help in the kitchen is composed of the negro race, my experience so far has been of two kinds: The woman who is afraid to use gas, and the other who uses it so extravagantly that the mistress will not allow her to continue its use. Now, how are we to overcome this difficulty? That is a question I want to have answered by men having a greater experience in it than I have. But before I sit down I would like to say what I have done, in attempt, at least, to overcome the difficulties that we meet with in this respect. When I was working up in Michigan, Minnesota and Wisconsin, they said, "Why it is just as easy as rolling off a log to go down in Southern States and sell gas ranges for cooking in the kitchen." And I had some such idea myself. I did not consider it just as easy as rolling off a log to go to Rockford, Ills., where they make and sell gas ranges, for there are some people in that city who do not yet use gas for cooking; how many I do not know. But in a country where you have 6 months of ice and snow, and wood lies around for the picking up, one would say that that is a hard row to hoe. I did have experience trying to sell gas stoves between November and February. That year they had snow in June, and you know how that is—some of you have been there. They will say, I can get along with my cooking stove yet awhile, and they keep saying that until the 4th of July, and then they say the warm weather is over; we can get along until next summer. In one of those States, the general manager of the company, when I asked him about the situation, said: "We usually have two seasons; the 4th of July and winter." I don't know what to say about Chattanooga in that respect, whether it is Christmas and summer; but the latter not exactly, because we had cold weather and ice there only a few days ago. Now, we have started there this kind of a proposition: The gas company employed one or two colored women who have received their education in domestic science classes, one of them at Minneapolis, in the domestic department of the University of Minnesota; the other at T. Booker Washington's Institute, in our beloved neighbor State nearby. These women have taught classes of children in the daytime from the high school and grammar school, all, of course, colored. Everything that emanates from a gas company being considered somewhat prejudiced, I avoided doing this work under the name and auspices of the gas company, so we opened our classes under the name of the Y. M. C. A. Colored Educational Department, and we have now had, since the early fall, at least 7 classes a week. Some days we have 2, other days but 1, and one day 3 classes; on Saturday, of course, none. At these classes we have charged admission, the money going to the Y. M. C. A. department, to help support their educational work. These little colored girls and grown up colored women have paid a nickel for every lecture, or 50 cents for the entire course of 12, covering a period of several months. They have paid that sum and attended these sessions more attentively and constantly than any of the demonstrations that have been given free for the benefit of the white population of any city that I have ever been in. On the first day of this month we had our graduating exercises and had a cooking contest. Ranges were placed in a row on the platform. We gave those girls exactly the same ingredients and recipes and started them all together at the word "go," and they commenced with the water and made soup, etc., through to the end of a complete dinner. The tables were set on the floor, which they decorated and supplied with everything—dishes, flowers and the like. The competitors were selected by a vote from the different classes; one from the grammar school and one from the high school, consisting of a team of three in each. We had 11 successful competitors for single bakings of cake, and they were baking all day long on the very same ranges, in the very same room and under the same conditions, so that it would be perfectly fair. I must say that I never saw anything more interesting and no scholars more interested in their work, and the products of that competition were from colored girls who were still in school. They are now crying for more of this kind of work, and I believe we have started in that State a number of first-class servants for the mistresses to take care of. The first thing I had to do, of course, was to teach those who did not know how to use a gas range, or were so careless with it that even the millionaires of our great cities—they are full of this kind of people—even they did not dare let them have the use of a gas range. We had classes in reading meters and in lighting and re-lighting the gas ranges, until the girls were so familiar with them that they had no fear of the popping or burning or flashing or anything of that kind. Now, I came to this conclusion: Some of those good people up there, who have had this colored help for many years, say you cannot do it; you cannot do it; and I, of course, say, "I will do it; I will do it; I insist that it can be done." I have found out all there is about it, and I would like to hear from you, gentlemen, if you have had any experience of this kind, and I would like to hear some suggestions as to how to overcome the difficulties. I would like to have some help. I am really in earnest trying to make every colored cook in my town an economical colored cook with a gas range. I have said it before on this floor, and I will say it again if I have another chance. I have said it, and I say it to my men nearly every day, that it does not make any difference what the cost of the gas is, it is cheaper, even if they give you coal or wood or cobs for nothing as fuel, and carry it in for you, than any other fuel. You cannot afford to use any other fuel for cooking. Yet they tell me they cannot get colored women to use gas ranges. I could tell you lots of stories of my experiences. They proved it to me. On my rounds I go to the back door—I don't care to go in by the front door, because I will be shown into the kitchen by one of those individuals we fear so much; the lady of the house sits in the parlor while I make the investigation. I would like to know if anyone has tried this way, and if they know of any better way. Is there any gas man that is so entirely disagreed that he says I must give it up? Of course, if I have to give it up I cannot sell gas, unless I am sure there is going to be a successful end to it, in every way, shape and manner. In Chattanooga there is going to be a gas range in every house, and women—colored women—who can cook on a gas range without ruining the people financiallv. They will be glad to have those women we are teaching. They will realize that these women can bake and cook and use gas ranges economically. We have a man in Chattanooga who won't put a gas stove in his house because he is afraid of the cook—a great, big man. Money is no object with him, as it is with many of the others; but he dare not leave the cook with the gas range for fear she will spend all his money or perhaps blow up his house. Now, gentlemen, can we educate enough colored cooks and "chefs" to supply the demand for every gas range we can place in a town? The majority of people, as you know, have help in their houses in our Southern cities, and they have it in Chattanooga. It is easy enough to go to a woman who does her own work and sell her a gas range; it is like rolling off a log, and it is easy to sell to the man who carries in the coal for her. I can sell a gas stove to that man or that woman, but to sell a gas stove to the woman when the cook does not care how great the gas bill is to her mistress, or, where the mistress does not care how hot the kitchen is, or how hard the work is; that is the hardest proposition I have been up against. I have taken this line up by educating these young girls and getting them started with our demonstrators—the good ones—putting them on the platform and helping them aid the platform demonstration work out, as well as to teach our school children. Even the old mammies are coming into line and finding out how easy it is. I found out they don't care how hard it is in the kitchen. You can't tell them that this is a summer stove; but if you tell them that it will save them time and work, and that they will have more time to sit down, if the mistress will let them get a gas stove, then you can get it in.

Mr. J. C. Rushin—I would like to hear from someone else. I don't feel like talking this morning. I feel sick. But I predict for the gas stove a great future. Whenever you hear a man say he is going to do a thing, you had better keep your eye on him. I did actual soliciting for 6 years and did nothing else but go from one house to the other and talk. We have in Atlanta a large number of negro population. I guess 40,000 of our population are colored. I never will forget the first time I thought of keeping a "nigger" to use a gas stove. I will tell you exactly how it happened. In Atlanta we have the finest colored female college in the United States. It was donated and is to-day supported by John D. Rockefeller. It is kept up in first-class shape. I think about 6 years ago we wanted to get a cooking school in this negro college so as to teach those girls how to cook with gas. A woman is President of this College and we worked on her for 3 years before we ever got her to agree to put in a cooking school. She hired a woman to come down there and teach cooking in this school. A class was organized with about 35 in it; 34 colored girls and myself. I was one of the pupils. Now I am not apt at anything. It takes me a long time to learn anything—longer than anybody else I know, but when I learn a thing I can't forget it. I went up there twice a week. We fitted up a cooking school—it was

designed by one of our workmen—little hot plates all around and two cooking ranges on the side, and they started to teach us how to cook. I learned it, I think, in about a month, but the girls she was teaching! Those niggers never did learn it. They were the thickest headed bunch I ever saw in my life. That woman had more patience! She would sit down and talk, and I would almost have a fit and say to myself, "Why in the world don't they learn," so I asked her one morning to let me teach. I taught them for a week, then I got disgusted and quit. Now, this gentleman says, at first you have to do something for somebody else before they will do anything for you. Now the trouble with the gas business, as I say, and also with the average gas man is, you must show them how you are going to do something for them, and then they will reciprocate. Everybody in the world has some innate good, but in some cases it is hard to bring it out. The meanest man in the penitentiary in Louisiana has some good in him, and if that had been gotten out of him, he would not be where he is now. The colored people are the ones we have to depend on to use gas ranges. We have to teach the little girls how to operate those gas ranges. In Atlanta, I am ashamed to say, there is only one cooking school, that is conducted and carried on properly and money spent on it. The gas bill is about $30 per month for teaching the pupils how to use gas. It certainly has done a wonderful amount of good. Of course, very few of these colored girls ever stop in Atlanta; they go to other towns. The only thing we do is to give them the ranges and the hot plates and keep them up. I go out there occasionally. They have a different teacher nearly every season, and when they open up the school, I go to see that it is running all right, that the appliances are in good shape, and that the range, when it pops back, won't frighten them. I have studied this thing in Atlanta for 2 years—trying to get the Board of Education in the county to put in cooking schools, and I am nearly "there" too. I believe when this Association meets again that the School Board in our county will have put in cooking departments for both boys and girls. If we can ever get them to see it is to their interest, as well as the gas companies' interest, there will not be any trouble at all. One of our preachers in Atlanta is a graduate of some Eastern college; he graduated as a lawyer and then went to preaching the gospel. About 3 months ago he was in a gas range manufacturer's plant in the East, and this fellow gave him the finest stove he ever saw for his church. This range was shipped down there, and I told him we would install it for nothing, would furnish a demonstrator to go there and teach his people, any time he wanted, how to use that gas range, free. The first lecture we had three colored women there, and I was instructor; but then we learned something about that gas stove. Next we had six. Now, whenever he telephones I go and teach those women. The colored people in Atlanta are more interested in it than the white people. There are two churches that are interested. This is one of the largest colored churches, I suppose, in the South, and they got the range from this fellow. Whenever I get help I want to get the churches to announce it from the pulpit that we will give cooking lessons in that church so many nights and afternoons in a week, and have the colored woman come there and learn to use a gas stove. As Mr. Huntting said about Chattanooga, so in Atlanta, the hardest thing we have to contend with is to sell a wealthy man a gas stove for a negro to use. Why, I went to find out after we had put a gas stove in a wealthy man's house. I went there every other day to see how it was working. As soon as we would leave it alone we would receive a letter, "Take out your gas stove," that he could not pay to run it. Last October, I think it was, Mr. * * * received a letter from a wealthy man in Atlanta, saying, "Take my gas stove out; my bill is $22.10." I asked him to let it stay another month and exactly 30 days from that day the bill was $9.06. The difference was that we had a negro woman who knew how to use it to cook there. The first time I heard a man say, "You can't sell rich people gas stoves," I tried to do so. I say that rich people are the people we want to get to put gas ranges in their places. First, we want to have a good, high-priced range to sell, then have someone who knows how to use the range, and use it economically, then we will solve the problem of selling gas stoves to wealthy people. You will never do it until you teach colored women to use the gas stove. They will have to go to colleges and schools to do that, and those who do not have the opportunity to go to school, you will have to go to the churches and such places as that and teach them. If Mr. Huntting goes ahead at Chattanooga you are going to hear from him some day or another, because he is on the right track and doing good and promoting the gas business. I think that every man who is a member of the Southern Gas Association should encourage him and give him all the advice he can, whether on the floor of this Convention or by writing to him or going to Chattanooga to see him. Personally, I am going to see him. The reason people talk about gas companies and abuse them and their gas is through ignorance. As Mr. Huntting says, gas is the best thing in the world. We have the finest business on the face of the earth. I have been in it all my life and I expect to die in it. There is nothing on earth as legitimate as the gas business to the man who is interested in it. Some day or another you will actually want to know what men like Mr. Huntting and others are doing. Take Mr. Eves, of Indianapolis; just see what he is doing up there. I went there and we didn't spend the day smoking cigars either; it was the busiest day in my life; I was sorry I couldn't stay a week. It was worth it to go there and see what he is doing. He is educating the people to use gas stoves. The trouble with us is we try to force a man to buy something he doesn't know anything about, and he turns it over to somebody else who knows less about it. Why, I sold a gas range in Atlanta a while ago to a fellow—he had a colored woman for a servant—and a couple of days afterwards I dropped into his house, in the back door. I always go the back way, to keep from ringing two door bells or knocking two doors down. When she came to the door, I said, "Cook, how is that range?" Her reply was: "Why, its the finest thing I ever saw. It hasn't gone out yet!" She didn't know how to cut it off. I went there, read the meter, and told the fellow what had happened, thus keeping him from coming to tell me at the end of the month. He asked, "Well, does she know how to use it?" I said, "I don't know, but I shall keep going there until she learns how." That chap is using his range up to to-day.

The President—Is it still going?

Mr. Rushin—No, they cut it out once in a while; but that shows what we have to contend with. When one has to contend with something, the quicker he learns the best way to get around the obstacle the better off he will be. As we can't get along without colored women, we must teach them how to use what we have to sell, otherwise your gas range will fall back on you. I am certainly under obligations to Mr. Huntting for bringing up that subject. It is a most vital thing. We must have people cook with gas everywhere. You go in any town now and if the Gas Company has any enterprise you will see the signs "Cook with Gas." You must show the people how to use it and also show them the least they can get along with by using it. Next year I hope to tell you more about it.

(To be Continued.)

The New York "Times" Puts it this Way.

This cartoon is reproduced from a recent issue of the New York *Times*, and it is meant to show, in really idiotic way, how the gas maker, when a cut is made in the gas rate, is able to overcome the receipts' difference by merely speeding the meter.

In connection with the yellow, red, blue and other colored newspapers' way of declaring that a reduction in the gas rate is theoretical rather than practical, it would seem in order to ask how it was that millions of dollars were piled up in a very few months, the millions representing the difference between a selling rate of $1 and of 80 cents per 1,000? The millions are there to a certainty, and the statements concerning the gas used are also a certainty.

Proposed Regulation of the Gas Service of Chicago.

The report made to the Committee on Gas, Oil and Electric Light of the Chicago City Council, on a proper and suitable regulation of the gas service, of Chicago, has been submitted by Messrs. D. C. and W. B. Jackson. The main features of the report, which is far from being satisfactory, either to the city or the Peoples Company, are here submitted:

Impurities.—Hydrogen sulphide: Not more than a trace should at any time be found in the gas.

Total sulphur: Present practice indicates that the maximum allowable total sulphur should not be greater than 30 grains per 100 cubic feet of gas, and we believe that for the conditions in the city of Chicago, 20 grains of sulphur per 100 cubic feet of gas should be the maximum limit.

Ammonia: Present practice indicates that this limit should not be greater than 10 grains of ammonia per 100 cubic feet of gas, and we believe that 10 grains per 100 cubic feet would be a suitable limit for Chicago.

Illuminating Value of Gas.—We believe that the illuminating value of the gas in Chicago should at no time fall below 22-candle power when burned at the rate of 5 cubic feet per hour, as provided in the existing Chicago ordinance.

Heating Value of Gas.—We believe that the heating value of the gas in Chicago should not be permitted to fall below 600 B.T.U. gross per cubic foot of gas. All results given above are to be understood as applying to 60° F. and 30 inches barometric pressure.

Pressure Fluctuations.—We believe that the maximum allowable variation of pressure at the inlet of any meter in Chicago should not be greater than 100 per cent. of the minimum pressure found at any time at that meter, except that it should be one duty of the chief gas inspector to set a new minimum limit upon the written request of the gas company when the conditions affecting the minimum pressure change owing to the growth of the gas system or to the development of the art; such changes to be made not oftener than once in 6 months. We understand that it is impossible at the present time for the gas company to maintain the gas pressure within such limits at all points upon their gas supply system. It would, therefore, seem that regulations relating to this feature of gas supply cannot be effective until the requisite changes have been made in the gas distribution system. In the meantime, we believe that the company should, upon the complaint of any consumer, at whose meter there is a greater variation than 100 per cent. of the minimum pressure, adjust his gas consuming devices so that the gas service is satisfactory to him, or should provide a local governor to hold the variation in pressure at the meter within the above prescribed limits.

Minimum Pressure.—The allowable pressure at the inlet of consumers' meters should never become less than a definite amount. Present practice indicates that 1½ inches of water pressure, at the street level, is a satisfactory minimum limit, and we believe that such a minimum could be a suitable one for the city of Chicago.

Maximum Pressure.—Our study of the question of gas pressures leads us to the belief that it is not desirable at the present time to set any hard and fast maximum allowable pressure in Chicago; but, owing to certain conditions heretofore explained, we believe where consumers now have gas consuming devices installed that will not suitably operate with pressures of over 6 inches at the inlet of the meter (located at the street level) that the gas company should adjust the consuming devices so that they will operate satisfactorily when the pressure rises above 6 inches.

Tests for Pressure.—We believe that in addition to the pressure measuring devices in the testing stations there should be at least three 7-day recording pressure gauges for each testing district, to be located at various points over the district in which a testing plant is situated and the locations to be changed from time to time. Such testing gauges to be of the line drawing kind which show the pressure of gas at every instant and each chart to be arranged to show the pressure continuously for 7 days.

Tests for Thermal Value and Candle Power.—We believe that besides the tests to be regularly made in the testing stations for heating power, additional tests should be made from time to time of gas taken at various points in each of the districts, and occasionally tests for candle power should be made, as well as for heating power.

Complete Analyses of Gas.—From time to time complete analyses of the gas should be made in each testing station, and whenever tests for calorific value of gas are made at points outside of the stations, complete analyses of the gas found at these points should be made.

Frequency of Tests.—We believe that tests for the candle power, thermal value and the presence of hydrogen sulphide, in the gas, should be made daily, excepting Sunday, in each testing station, and the tests for ammonia and sulphur should be made weekly, while the recording charts of the various continuous pressure gauges should be changed weekly. The additional tests for thermal value and candle power of gas taken from outside points should be made from time to time as may be found necessary for a complete determination of the quality of gas as supplied throughout the city. Also, the complete analyses of the gas should be made with sufficient frequency to properly supplement the other tests.

Rules as above proposed, if carried out by the gas company, will in our opinion, assure a satisfactory gas supply to the city of Chicago, and the operation of the testing stations and other supervisions outlined, when the work is carried out in the above described manner, will give the city all information needed for enforcing the rules.

Special English Correspondence.

COMMUNICATED BY NORTON H. HUMPHRYS.

SALISBURY, ENGLAND, March 10th, 1909.

The Society of British Gas Industries.—Higher Education for Gas Engineers.—The Hygienic Utilization of Gas.

One great advantage of the gas industry is, not merely that it is a home industry, but also a large employer of local labor. In this respect there are few that would equal it. Of the total sum received from the consumers a large proportion is returned directly to the district through the medium of the employees, whose salaries and wages may be regarded as being spent in the place where they are paid. The proportion so returned is probably not less than one-third. Then the coal, iron and fireclay which form the principal items amongst the materials purchased, are frequently supplied from the immediate neighborhood, and it rarely happens that they cannot be supplied at home, but have to be imported from abroad. And even in the latter case, they afford employment for shipping and encourage exports for the outward journey, and in that way encourage home trade. And yet some people seem to regard the gas undertaking as being established entirely for the benefit of the shareholders, who are also erroneously classed as millionaires. The gas undertaking is not only a benefit to the community as a wage-paying concern, but also as affording a safe home investment, and it is largely the fault of the investing public if the greater part of the profits does not also stay in the district. In England, a remarkable feature is the large number of local small holders, comprising retired tradesmen and widows or daughters of the same, who have invested part of the savings of a lifetime in what appears to be a safe home investment, likely to yield a fair return in the shape of dividend sufficient to afford the means for a comfortable but not extravagant existence. Some time ago I knew a case where an official decamped with the funds that should have supplied the dividend, and as a result none could be declared, and as a fact, the result was severe privation to many elderly people. It is a mistake to regard the gas stockholder as an opulent individual who merely requires the dividend as a means of ministering to foolish extravagances.

But in addition to the gas works proper there are a large number of industries that it has called into existence. There are large works, covering acres of ground and employing artizans by the thousand, doing nothing but manufacture iron and steel structures—mouthpieces, pipes and hydraulic engines for the retort house, condensers, washers, scrubbers, purifiers and gasholders. There are the fireclay works for making the retorts and various patterns of bricks and blocks required. Also the makers of various kinds of pipes, cast, steel or wrought iron, brass, lead, etc., the meter manufacturers, and those who turn out gas cookers or heaters by the thousand, the makers of burners and incandescent mantles, and of various fitments. A number of gentlemen who have the control of these auxiliary interests, have combined together to form the Society of British Gas Industries, which has just held a most successful annual meeting in London. The report of the Council, after a suitable allusion to the death of the President, Sir Geo. T. Livesey, in October last, refers to some of the work done during the year, including a conference with the Institution of Gas Engineers, at which Standard Clauses for Contracts were agreed upon. A memorial has been presented to the Board of Trade in favor of cheaper and simpler proceedings for securing Parliamentary powers for gas undertakings. In consequence of

the expense, many small concerns are at present unable to obtain the benefits of the Gas Works Facilities Acts. The Society is also represented in the conference respecting the standardization of refractory materials, to which I alluded last month. After taking the report, and the usual routine business, Mr. Thomas Newbigging was introduced as the successor to the late Sir Geo. Livesey in the Presidential chair, and proceeded to deliver a characteristic inaugural address. As you will no doubt reproduce this utterance, which is important as presenting the positive and the immediate future prospects of the gas industry—taking the work in its broadest sense—in full, I will not atsempt to give a *resumé* but will simply recommend it to the attention of your readers as coming from the best and most reliable authority in existence.

At a meeting held in London in December last, under the auspices of the Institution of Gas Engineers, it was decided that, as a memorial to the late Sir George T. Livesey, an endeavor should be made to raise a sum of not less than £10,000, for the carrying out of one of the latest of the numerous projects for improving the position of gas engineers that at one time or another have received his sympathy and energetic support, and that was the establishment of a chair for gas engineering and fuel at the Leeds University. Every gas undertaking in the country has been afforded an opportunity of assisting in the work, and though the response has not been so extensive or unanimous as might reasonably have been expected, a large number of donations have been received, and the total now stands at over £8,000, so the project is within reasonable distance of completion. Many people are exceedingly bashful when a subscription list is opened, and do not like to appear on the first page. After the willing ones have subscribed there is always a second rank to fall back upon, composed of people who will give if judiciously and tactfully pressed to do so, but not otherwise. In this case there is a sufficiently large residue who go to swell the number in the second rank to give a good prospect of the desired amount being attained. Mr. Newbigging, in the address above referred to, gave the scheme unstinted and sympathetic support. In the course of the after dinner proceedings, Prof. Smithells, the Principal of the Leeds University, in replying to the toast of the visitors, said that he wished to see, in some of the high places of learning, a course of training for entry to the gas engineering profession. A great future lay before the gas industry, it must avail itself of the resources of science, and the question was, how could this be accomplished? The opportunity had arrived sooner than he had dared to hope, and he was proud that the University with which he was connected was to be the seat of the first serious attempt to meet the want. He alluded to the need for co-operation between men of science and men of industry, and to the undesirable severance that had often been found to exist between the two. But he hoped the new universities that had been established in our manufacturing towns would bring about that union that he thought to be so desirable. The new charge committed to the Leeds University would be carried out faithfully in accordance with the wishes of those who had intrusted it to them. They could do a great deal in the way of research and of imparting accumulated knowledge, but they would not claim to replace practical experience. He asked not only for pecuniary support, but for the sympathy of the gas industry, without which the new department could not possibly be a success.

The time is opportune for the introduction of this movement, seeing that the subject of technical education is very much in the air. At a recent meeting of the Birmingham section of the Society of Chemical Industry, a Society that might lay claim to having done a great deal towards promoting that unity between men of learning and men of industry, which was so ably pleaded for by Prof. Smithells, a long paper was submitted, dealing very fully with the university training of industrial chemists, and it was the means of eliciting a no less valuable discussion. The whole proceeding indicated that the subject was regarded as a question of the day, and the report may well be brought into notice as worthy the careful attention of all who are interested in the matter. Various gas managers, who also happen to be interested in public education, have done excellent foundation work in the way of promoting interest amongst the scholars in the manufacture of gas. After a descriptive course of lessons the children are allowed to visit the works and see how things are done for themselves. Mr. Joseph Davis, Manager of the gas works at Gravesend, has for some years taken an interest in this work, offering prizes for the best essays, written after the lessons and the visit. He has recently sent to our technical papers some examples of such essays, which form interesting reading and effective proof of the possibility of inciting intelligent interest and powers of observation in children only 9 or 10 years of age. It is evident, also, that many of the pupils welcome the look over the gas works as a delightful change from the ordinary school routine. I have recently referred to the efforts that are being put forth for the technical education and training of their employees by the London Gas Companies, as a recognition of the need for an all round advance in this matter. And when we look at the advances of to-day, in every department, from the retort to the burner, it is evident that this movement must also go with the times. When we compare the stoking and conveying machinery, the coke and the oxide conveyors, the incandescent burners and various appliances for consuming gas, that at present have to be dealt with and kept in order, the need for the best available *technique* is evident.

Great efforts are being made by those interested in electricity to disparage the use of gas by appealing to the nerves of the public, and, without actually making any definite statement of fact, to create an impression that the use of gas brings in its train all sorts of diseases and permanent injuries to the human race. Facts are not merely superfluous, but objectionable to calumniators of this despicable type. And the imposing edifice erected on the rotten foundations of assumption and inuendo can easily be shattered by a few plain statements of fact. In view of the extent to which the public press has been utilized, it would be a good plan if the gas interests were to take steps for securing a similar publicity for a correct statement of the facts. In connection with this some excellent material is afforded by a lecture on the hygienic utilization of gas, recently delivered before the London and Southern District Junior Gas Association, by Dr. S. Rideal. Some time ago this gentleman was engaged, at the initiative of the late Sir Geo. Livesey, to make careful researches, an ordinary workman's cottage being placed at his disposal for the purpose. In his lecture he deals very fully with the facts elicited at this inquiry, and conclusively shows that, with ordinary ventilation, such as would be necessary apart from any question of lighting, the products of combustion will never accumulate to a sufficient extent to exercise any bad effects, but that the gas flames do valuable service as destroyers of organic germs, on which an inclosed source of light could exercise no effect. Both Prof. Lewes and Prof. Frankland have shown that it is quite practicable to use gas as an aid to ventilation, and to secure a purer atmosphere for the inmates of a room when gas is burning than when it is not.

Items of Interest
FROM VARIOUS LOCALITIES.

MR. J. C. ROBINSON, of New York city, has been appointed Manager of the New Business Department of the Nassau and Suffolk Lighting Company, with headquarters at Freeport, L. I.

THE contract for a new 6-foot set of water gas apparatus, including oil storage tanks, connections and miscellaneous machinery, to be installed in the works of the Urbana and Champaign Railway, Gas and Electric Company, has been awarded to the Gas Machinery Company, of Cleveland, O. The increased attendance in the University of Illinois, located at Champaign, has been so marked in the last few years, and the city in other respects has developed in such ratio that considerable main extensions are also to be made on the distributing system.

ACCORDING to an order entered some days ago by Judge Waddill, Federal Judge for the District, sitting at Norfolk, Va., Messrs. James A. Burgess and D. S. Mills were discharged from their duties as receivers of the Suffolk (Va.) Gas Company. The Court allowed them $1,250 each for their services, which, it might be noted in concluding, was not one cent too much.

AT a special meeting of the shareholders in the Zanesville (O.) Gas Light Company, held the 18th inst., it was voted to amend the charter of the Company, permitting it to furnish natural gas, also electric currents. The city of Zanesville owns 213 shares of the stock, and this was voted in favor of the amendment by President Stuart of the City Sinking Fund. This action undoubtedly heralds the intention of the Company to put up a stiff fight with the Ohio Fuel Supply Company.

A CORRESPONDENT in Birmingham, Ala., writing under date of the 18th inst., inclosed the following item from a recent issue of the Birmingham *News*, respecting the history of the gas development of that

city: "The gas division of the Birmingham Railway, Light and Power Company is the oldest branch of the service, the original Birmingham Gas and Illuminating Company having been organized in 1880. This Company became the Birmingham Gas, Electric and Power Company in 1889. The Birmingham Gas Company succeeded that organization and this Company went into the consolidation of the gas and electric properties in 1901. The original electric lighting plant was the Edison Electric Illuminating Company, organized in 1886, and the Merchants Electric Light and Power Company, organized in 1889, the former getting control of the latter in 1890. Later in the same year the Consolidated Electric Light Company was organized and took over the other Company. This last organization went into the consolidation of all the properties in 1901, forming the electric lighting department of the Birmingham Railway, Light and Power Company, which has since been enlarged to several times its former size. Since the creation of the present Company the gas department has made great strides. At present the plant has a capacity of 900,000 cubic feet of gas per day, which is more than four times the capacity of the plant in 1901."

WE understand that the Ottawa (Ills.) Gas Light and Coke Company is likely to be taken over by the syndicate in this State, headed by Mr. W. T. Morris and associates, of Ithaca, N. Y. It certainly could not go into better hands.

IN respect of the determination of the authorities of Kansas City, Mo., "to examine into the equipment and facilities of the natural gas companies, and furnish what evidence, if any, is required to fulfil the obligation of the franchise," quite some rapid movement has been recorded. The suggested examination is to be made by experts selected on behalf of the city and the Company, two to be named by each, the four thus chosen to select a fifth. The experts named on behalf of the city are, Messrs. Carroll Miller, of Pittsburgh, Pa., and Mastin Simpson, of Kansas City. Up to this writing the experts to have charge of the Company's end of the investigation had not been named; but one thing in connection therewith certainly does seem odd, to say the least of it, which oddity lies in the fact that the three great theoretical experts—Profs. Bemis, Marks and Alton D. Adams have failed, to say nothing of Mr. Loomis, to secure appointments in this Kansas City controversy.

"THE first annual reunion of the Brooklyn Union Gas Employees Association was successfully brought off the evening of the 12th inst., the affair taking place in Prospect Hall, which was prettily decorated. The general appointments of the premises, too, were all that could be desired. Prior to the dancing a well-varied and 'catchy' vaudeville programme was rendered. The dancing was, of course, all that it should have been. In fact, not a thing occurred to mar the harmony of the proceedings. The officers of the Association are: President, Paul E. Mitchell; First Vice-President, J. A. Bohn; Second Vice-President, J. M. Mott; Secretary, E. M. Smith; Treasurer, O. C. Woller. There were over 250 guests for the Committee of Arrangements to take care of, and the Committeemen certainly did their work well.—WALTER."

"B. S. M.," writing from Leominster, Mass., under date of the 20th inst., says: "This is a small city, of course, but we have taken on many airs since the advent here, this week, of Miss Anna Virginia Miller, the accomplished lecturess on cooking by gas. The demonstrations, which were under the direct supervision of the Leominster Gas Company, and carried out in the Main street headquarters thereof, were attended by the most prominent women in the city. Of course, I do not call attention to this as anything remarkable, but it is quite satisfactory to note that, as a travelling man in the appliance line, the plan of giving demonstration lessons on cooking by gas finds much favor and much resultant profit even in places as small as Leominster is. Without dwelling too much on this, I feel constrained to say that the course of lectures under consideration would have done credit to a much more populous center."

"B. R.," in a message from Bangor, Me., written the 15th inst., says: "If ever there was a happy man in Maine that man was Peter Loughran, who some evenings ago was presented by the Portland (Me.) Gas Light Company with a handsome water set in silver. The gift was made in recognition of his faithful service to the Company, the beginning of which dates back to 1859. Mr. Loughran came to this country in 1858, and about, if not really, his only employer has been this present one. The gift carries the following inscription:

Portland Gas Light Company.
1859. Neal Dow, President.
1909. Col. F. N. Dow, President.
Presented to Peter Loughran
For 50 Years' Faithful Service.
Through E. H. Yorke, Superintendent.
March 10, 1909.

The recipient has certainly served his employers faithfully and well, and this act on the part of his employers is certainly worthy of more than passing praise, since it shows an appreciation that not often comes to men in the employ of corporations generally, whose place of service is much higher than that filled by Mr. Loughran."

THE work of constructing a gas plant for the supply of Ontario, Cal., had hardly reached a stage showing pronounced advancement, when the residents of Upland, a settlement some miles away, appealed to the Ontario folks to extend the service to them. The reply was that Upland could have the service if 200 consumers would engage themselves for it. After 2 weeks' canvassing the requisite signatures were obtained, and Upland, therefore, is happy in knowing that it is still close to the head of the procession. It is stipulated in the franchise that the selling rate shall not exceed $1.50 per 1,000 cubic feet.—V. S."

THE Nebraska Coal Company has been awarded a franchise for the supplying of gas to the residents of Rawlins, Wyo. It is worthy of note that the authorities would only grant a franchise to run for 11 years, at the expiration of which time it must come before the authorities for revision.

A CORRESPONDENT in Youngstown, O., forwards the following mention from that city, under date of the 16th inst.—to it we add on our own account that Moses Coombs was a man in every best sense of the term: "Moses Coombs, the late Superintendent of the gasd ivision of the Youngstown Consolidated Gas and Electric Company, whose sudden death occurred the evening of last Saturday, was laid to rest in Oakhill Cemetery on Tuesday afternoon. The funeral services, under the auspices of Tod Post, G. A. R., of which deceased was a member, was held at his late residence, this afternoon, on High street. As a token of respect to the memory of the dead, the offices of the Company were closed during the afternoon, and almost everyone in its service assisted in the ceremonies The services at the house having been concluded, the members of Tod Post, and the survivors of Co. D., 155th Ohio Volunteers Infantry, affiliated with the Post in the services at the grave, and the procession thereto. A most solemn happening was the final volley of musketry that terminated the services at beautiful Oakhill. The death of Superintendent Coombs came as a great shock to the community at large and to the Company in particular. Officials of the latter say that deceased was one of the best gas experts in this section of the country, and through his efforts the local plant was able to turn out the best product. Mr. Coombs heart was in his work, and as a result he earned a merited reputation in his particular line. Whenever the Youngstown man attended a convention his words of advice and experience were listened to eagerly."

THE project of operating a gas plant in Lewes, Del., is being seriously considered by local capitalists.

A CONTEMPORARY notes that the financial statement of the Lincoln (Neb.) Gas and Electric Company for 1908 shows that the Company made a nice increase in earnings over 1907, and this was done in spite of the fact that a severe flood in June put the electric department out of business for 10 days and for 3 days the gas mains were practically useless. Also, in September a heavy windstorm so injured the electric light connections that the system was again out of commission for over 4 days. The gross earnings for 1908 were $363,774, an increase of $10,599 over 1907. The operating expenses were $234,539, a decrease of $6,581. The net earnings from operation for 1908 were $129,234, an increase of $17,181. The bond interest for 1908 was $64,265, an increase of $2,211. The net surplus for 1908 was $64,968, an increase of $14,969 over 1907, for which year the net surplus was $49,999. The Company has $2,250,000 of stock, showing that the net surplus for last year equaled a little less than 2.75 per cent. on the capital stock.

The Market for Gas Securities.

The election of Mr. Cortleyou to the Presidency of the Consolidated Gas Company being an accomplished fact, it is, of course, the duty of all concerned to give him that aid which only can cause his administration to become thoroughly effective. A man of affairs in every large sense, of undoubted courage, not of the sort which causes a bull to rage over a red rag, it remains to be seen whether he can adapt himself to the grind inseparable from the management of a large commercial corporation. Some thought the mantle would fall upon Mr. Addicks, many hoped it would, and in this connection it may be not amiss to now repeat a word or two spoken by Mr. Addicks. In reply to a question as to who seemed next in line for the Presidency, he said: "I do not know. I have no idea; but I am certain, whoever he is, that he will have the best help from this force that the force can give."

The result is a rapid rise in Consolidated, which rise is really more than shared in approximately by the Brooklyn Union. The general gas share market is better than steady, and marked advances have been noted in gas bonds. It is worthy of note that the New York and Richmond Gas Company, Staten Island, showed a net profit for 1908 of all but $50,000. That seems like pretty fast going.

Gas Stocks.

Quotations by George W. Close, Broker and Dealer in Gas Stocks.

16 WALL STREET, NEW YORK CITY.

MARCH 29.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share.

N. Y. City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked.*
Consolidated Gas Co.	$78,177,000	100	132	132¼
Central Union Gas Co.—				
1st 5's, due 1972, J. & J.	3,000,000	1,000	98	101
Equitable Gas Light Co.—				
Con. 5's, due 1932, M. & S.	1,000,000	1,000	—	105
Mutual Gas Co.	3,500,000	100	145	155
New Amsterdam Gas Co.—				
1st Con. 5's, due 1948, J. & J.	11,000,000	1,000	98½	99½
New York & Richmond Gas Co. (Staten Island)	1,500,000	100	37	43
1st Mtg. Gold Bds. 5 p. ct.	1,000,000	—	100	101
New York and East River—				
1st 5's, due 1944, J. & J.	3,500,000	1,000	104	107
Con. 5's, due 1945, J. & J.	1,500,000	—	97	101
Northern Union—				
1st 5's, due 1997, J. & J.	1,250,000	1,000	94	100
Standard	5,000,000	100	—	75
Preferred	5,000,000	100	70	100
1st Mtg. 5's, due 1930, M. & N.	1,500,000	1,000	100	105
The Brooklyn Union	15,000,000	1,000	130	132
1st Con. 5's, due 1948, M. & N.	15,000,000	—	91½	92
Yonkers	299,650	500	130	—
Out-of-Town Companies.				
Bay State	50,000,000	50	1¼	1⅝
" Income Bonds	2,000,000	1,000	—	75
Binghampton Gas Works	450,000	100	—	65
" 1st Mtg. 5's	500,000	1,000	90	96
Boston United Gas Co.—				
1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47½	50
Buffalo City Gas Co.	5,500,000	100	5	8
Bonds, 5's	5,250,000	1,000	60	60¼
Capital, Sacramento	500,000	50	—	35
Bonds (6's)	150,000	1,000	—	—
Chicago Gas Co. Guaranteed Gold Bonds	7,000,000	1,000	104	105¼
Cincinnati Gas and Electric Co.	29,500,000	100	91½	92
Columbus (O.) Gas Co., 1st Mortgage Bonds	1,500,000	1,000	96	98
Columbus (O.) Gas Lt. & Heating Co.	1,682,750	100	90½	91
Preferred	3,036,500	100	75½	80
Consumers, Toronto	2,000,000	50	200	204
Consolidated, Baltimore	11,000,000	100	—	105
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Chesapeake, 1st 6's	1,000,000	—	—	—
Equitable, 1st 6's	910,000	—	—	—
Consolidated, 1st 5's	1,490,000	—	—	112
Consolidated Gas Co. of N. J.	1,000,000	100	15	17
Con. Mtg. 5's	880,000	1,000	92	95
Bonds	75,000	—	—	100
Denver Gas and Electric	458,000	—	102	105
Detroit City Gas Co	5,000,000	50	—	59
" Prior Lien 5's	4,619,000	1,000	97	100½
Detroit Gas Co., 5's	881,000	1,000	75	80
Equitable Gas & Fuel Co., Chicago, Bonds	2,000,000	1,000	—	101
Essex and Hudson Gas Co.	6,500,000	—	39	40
Fort Wayne	2,000,000	—	—	—
" Bonds	2,000,000	—	55	—
Grand Rapids Gas Light Co., 1st Mtg. 5's	1,225,000	1,000	104½	105

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DIVIDEND NOTICE.

OFFICE OF THE UNITED GAS IMPROVEMENT CO., N. W. CORNER BROAD AND ARCH STS., PHILADELPHIA, PA., March 10, 1909.

The Directors have this day declared a quarterly dividend of 2 per cent. (one dollar per share), payable April 15th, 1909, to stockholders of record at the close of business, March 31, 1909. Checks will be mailed.

1762-5 LEWIS LILLIE, Treasurer.

CITY OF BALTIMORE, LAMPS AND LIGHTING DEPARTMENT.

To Manufacturers of Street Lamp Burners and Fixtures:

The Superintendent of Lamps and Lighting of the City of Baltimore, City Hall, desires to purchase incandescent gas and gasoline lamp burners for street lighting purposes—the burners to produce a light equal to between 55 and 60-candle power.

In addition to the above and with a view to the improvement of the present equipment, information is desired concerning the most modern type of incandescent gas and naphtha street lighting fixtures and the terms upon which such fixtures can be obtained by the city.

In order to demonstrate the light-giving power and the artistic appearance of such equipment, tests and street exhibitions may be made, if necessary.

SUPERINTENDENT OF LAMPS AND LIGHTING,
1761-4 Baltimore, Md.

POSITION WANTED

As Superintendent,

By a competent, practical man, experienced in all details, with a company that will appreciate close application to business. Either gas or combined gas and electric plant. Middle West preferred. Address, "K. K.,"
1761-4 Care this Journal.

Position Wanted

By a competent and reliable man, with 13 years of thorough, practical experience in all departments of the gas business; 33 years of age; married; strictly sober; good technical education, and one who can show good results. At present employed as manager in a city of 40,000 inhabitants. Can furnish first-class references from his present and past employers, as well as others. Willing to go anywhere, but the Far West or Pacific Coast preferred. Address, "BOX 24,"
1761-4 Care this Journal.

Position Wanted

As Manager or Superintendent of Coal or Water Gas Plant,

By competent man with practical operating experience in all departments, both as superintendent and mansger. Best of references. Open for engagement April 15, 1909.
1764-2 Address, "A. H. H.," care this Journal.

Position Wanted

As Superintendent,

By a competent gas man who has had practical experience in all branches of the business, both coal and water gas. At present employed. A-1 references.
1755-tf Address, "R. C.," care this Journal.

Wanted, Position

As Superintendent or Manager.

An experienced manager desires a position as superintendent or manager of either coal or water gas plant. Best of references.
Address, "T. B.,"
1763-2 Care this Journal.

Position Wanted

As Superintendent,

By a competent water gas manufacturer, 10 years' experience, now employed by a company making 350,000,000 feet. Also street foreman, competent on high and low pressure work, and who can get results.
1764-1 Address, "S. A. K.," care this Journal.

WANTED,

Position as Superintendent of Manufacturing and Distribution

Of plant turning out not less than 300,000 feet per day. Address, "O.,"
1764-1 Care this Journal.

Position Wanted

As Manager or Superintendent,

By a young married man, 8 years' practical experience in the manufacture and distribution of both coal and water gas. At present in charge of plant sending out 24,000,000 cubic feet. Good office manager and hustler for new business.
Address, "C. E.,"
1764-2 Care this Journal.

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First-Class Water Gas Maker.

Must have had 5 years' experience, furnish references and guarantee results. Preferably one now employed. All correspondence confidential. Salary expected. Address, "D.,"
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EXPERIENCED SOLICITOR,

Earning or having recently earned not less than $20 per week. Apply by letter, stating experience, salary received, and giving references, to R. C. WARE,
1764-1 Boston Consolidated Gas Co., Boston, Mass.

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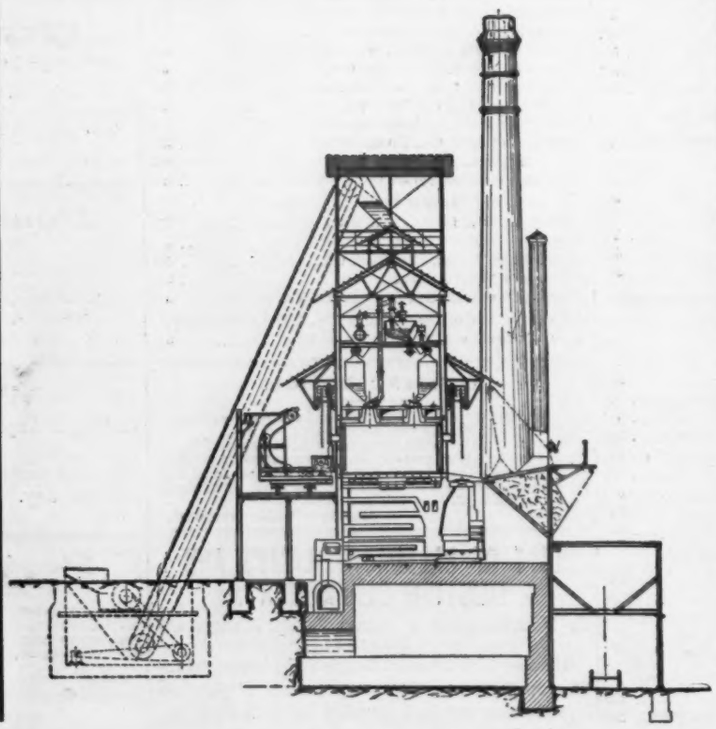

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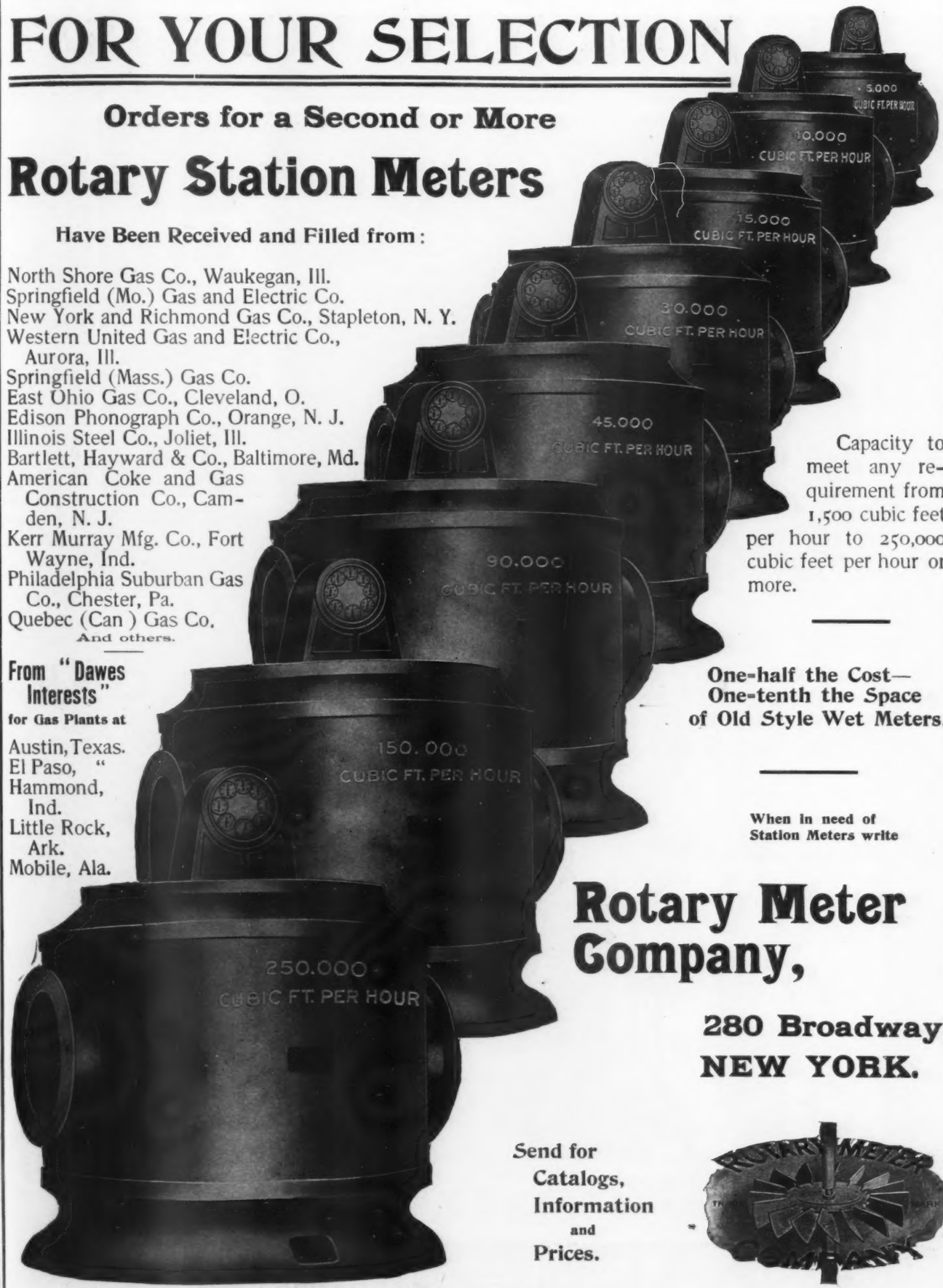
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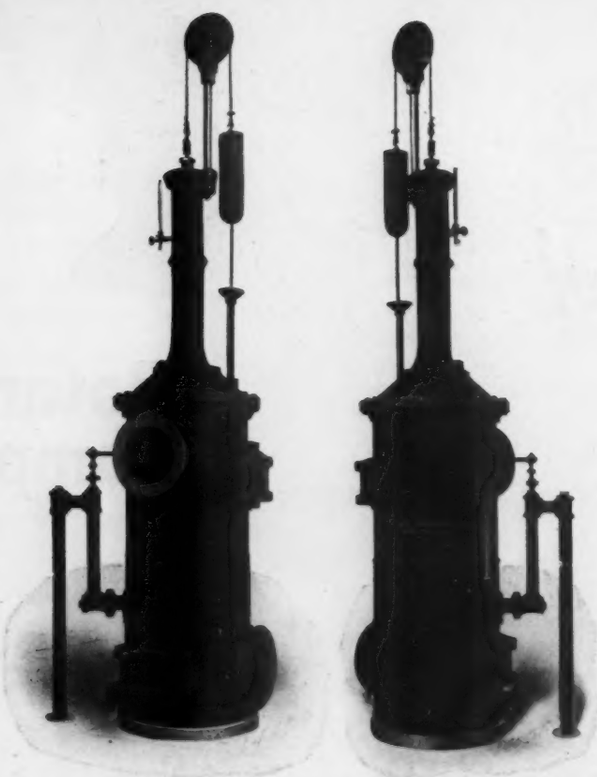

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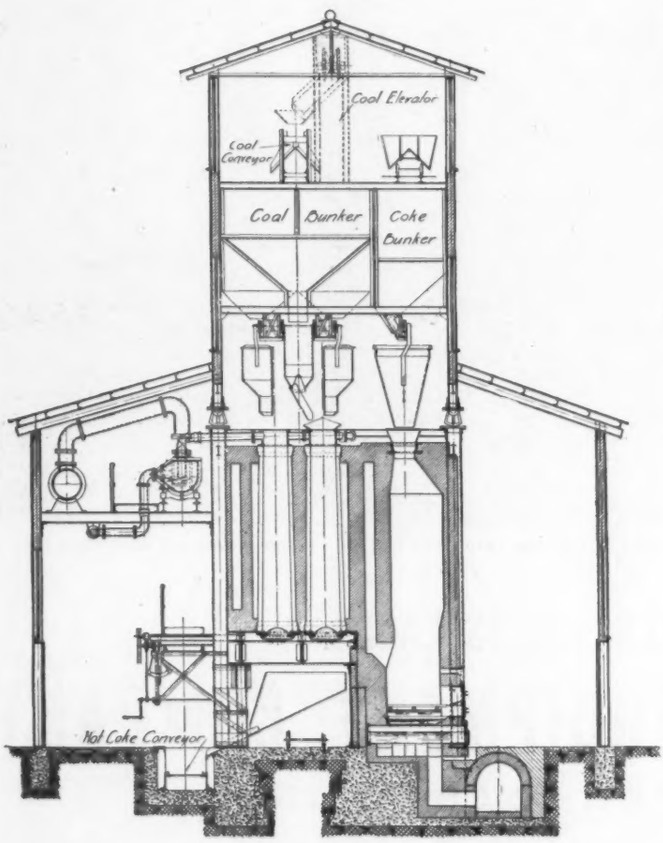

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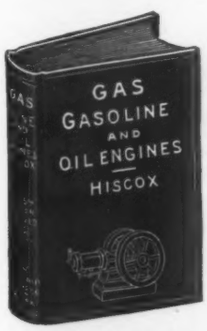

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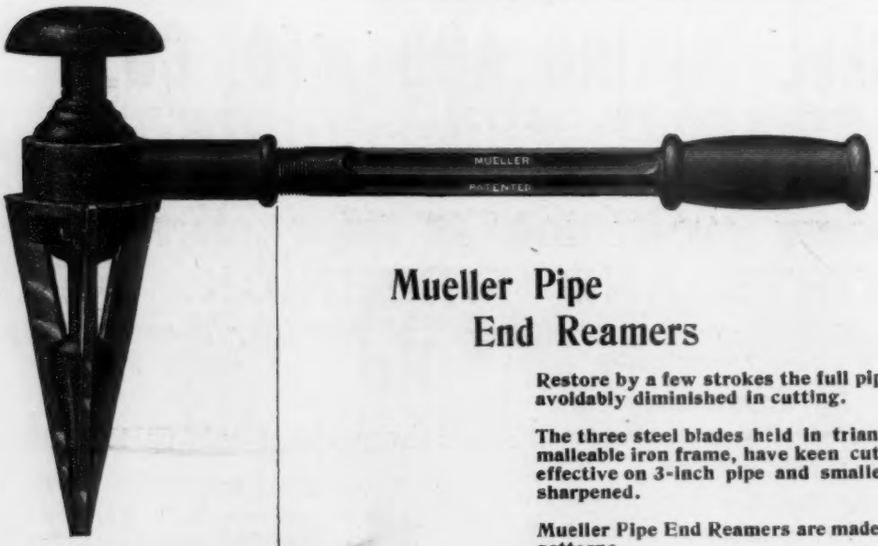

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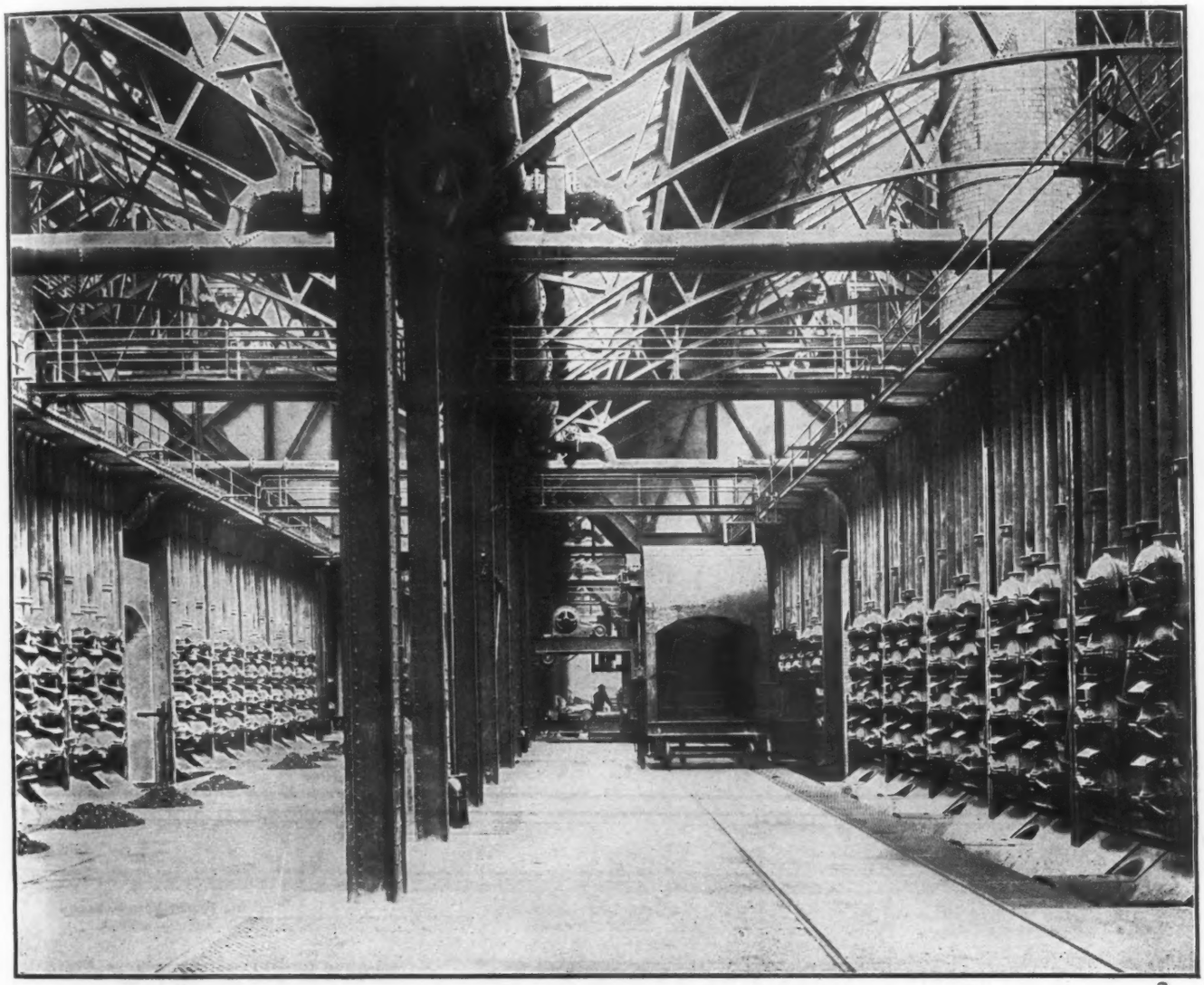

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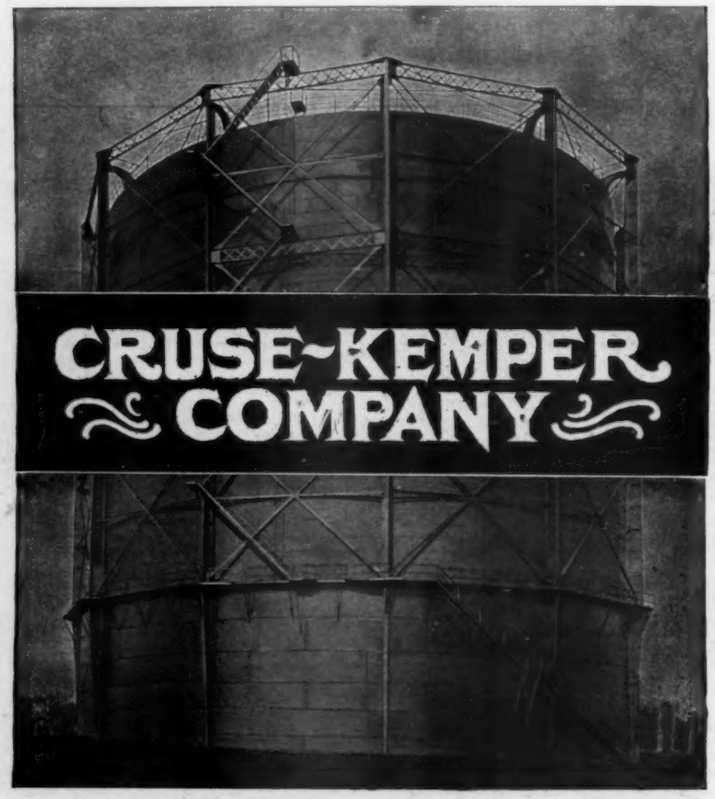

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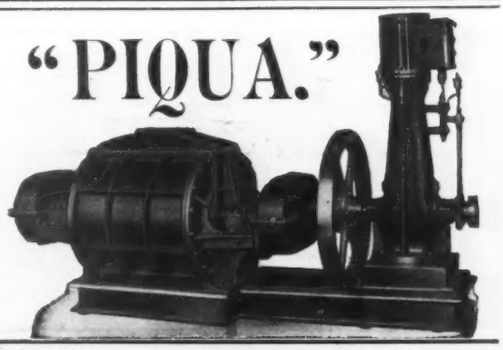

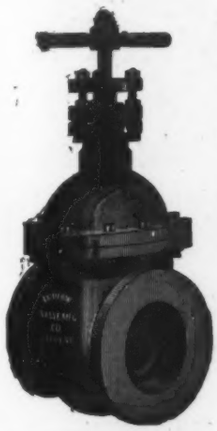

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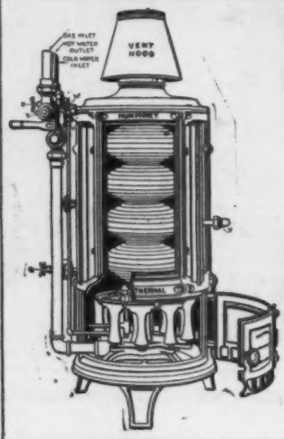

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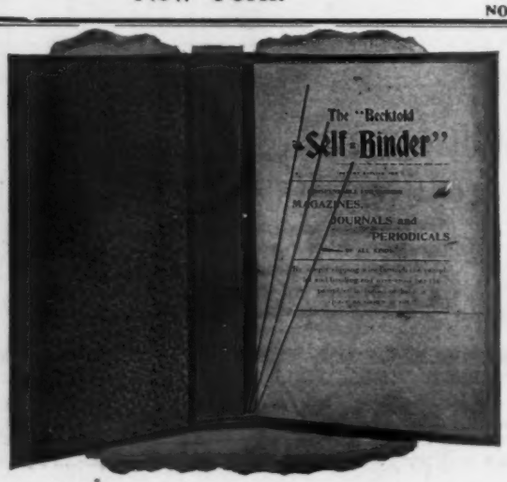

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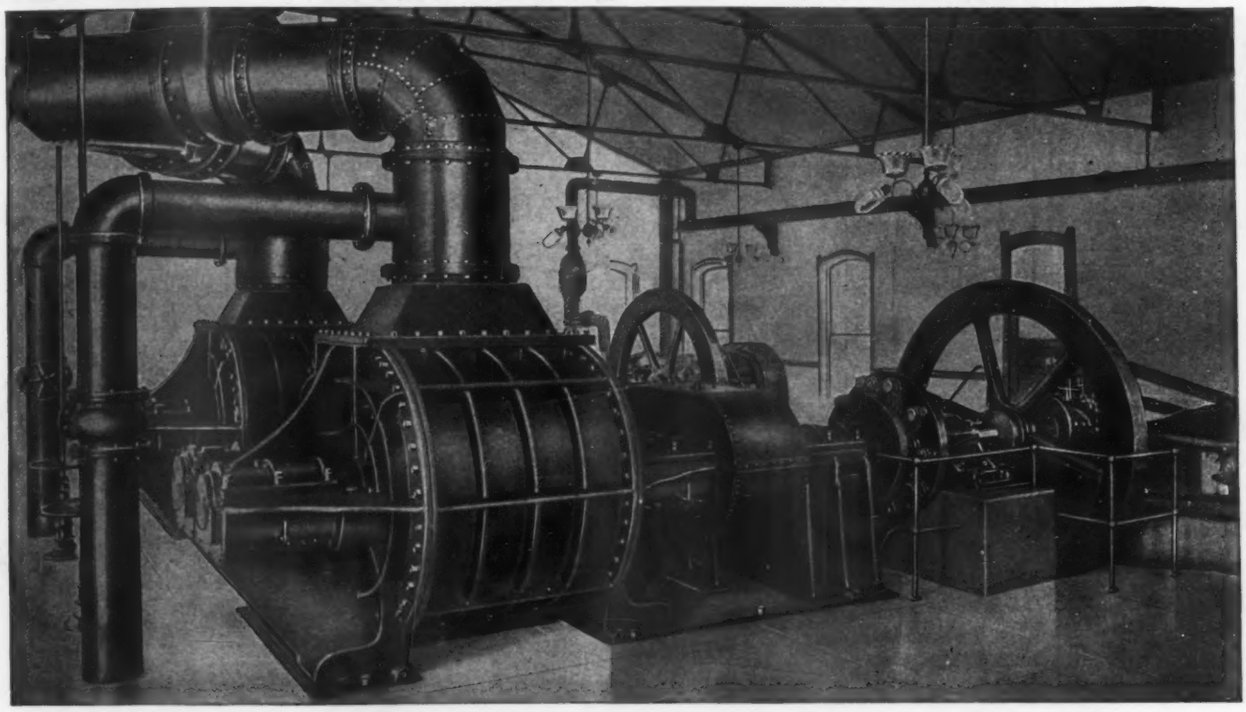

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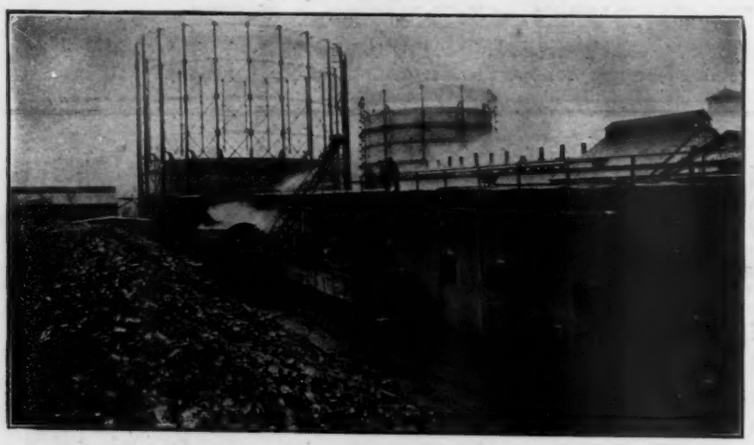

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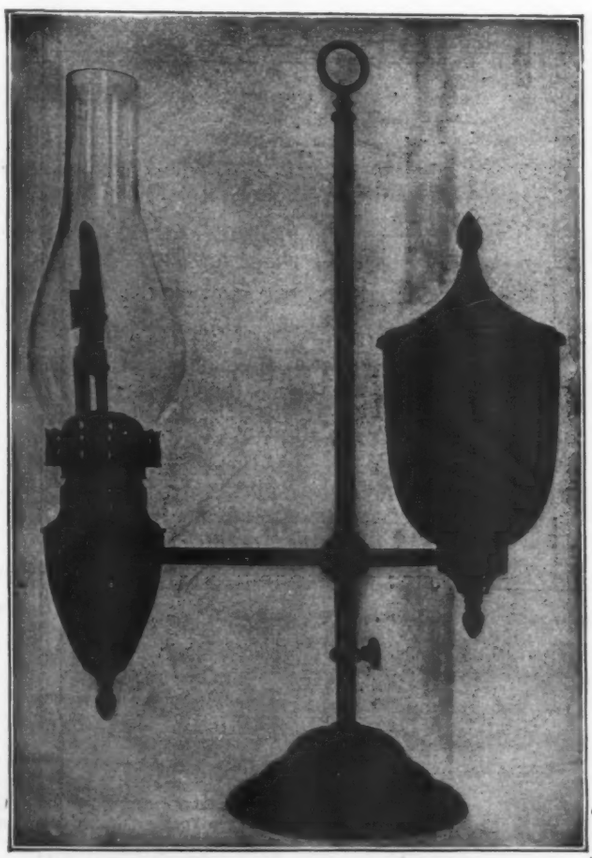
Day of Week.	Table No. 1. Following the Moon. Date.	Light.	Extinguish.
Thu.	1	3.40AM	4.50AM
Fri.	2	4.10	4.50
Sat.	3	4.30	4.50
Sun.	4	No L.	No L.
Mon.	5	No L. FM	No L.
Tue.	6	No L.	No L.
Wed.	7	7.00PM	9.20PM
Thu.	8	7 00	10.20
Fri.	9	7.00	11.30
Sat.	10	7.00	12.30AM
Sun.	11	7.10	1.30
Mon.	12	7.10	2.30
Tue.	13	7.10LQ	3.20
Wed.	14	7.10	4.00
Thu.	15	7.10	4.20
Fri.	16	7.10	4.20
Sat.	17	7.10	4.20
Sun.	18	7.10	4.10
Mon.	19	7.10NM	4.10
Tue.	20	7.10	4.10
Wed.	21	7.10	4.10
Thu.	22	7.10	4.10
Fri.	23	7.10	4.10
Sat.	24	11.00	4.10
Sun.	25	11.50	4.00
Mon.	26	12.40AM FQ	4.00
Tue.	27	1.10	4.00
Wed.	28	1.40	4.00
Thu.	29	2.10	4.00
Fri.	30	2.30	4.00

TOTAL HOURS DURING 1909.

By Table No. 1.

	Hrs.Min.
January	212.20
February	183.40
March	173.00
April	151.10
May	144.10
June	138.50
July	145.40
August	160.30
September	180.00
October	201.00
November	216.30
December	233.40
Total, yr.	2140.30



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3d. It is much less dangerous than Pentane, which is a kind of gasolene.

4th. It is not easily affected by air currents in the photometer room.

5th. Since the lamp may burn continuously, the candle power of gas may be taken at any moment, if necessary. This insures steady illuminating power without waste of carburetting material.

6th. The first cost of the lamp brings it within the reach of even small gas works.

7th. Costs much less to maintain than a Pentane lamp or sperm candles doing the same service.

8th. Is not affected by the weather.

PUBLIC LIGHTING TABLE.

APRIL, 1909.

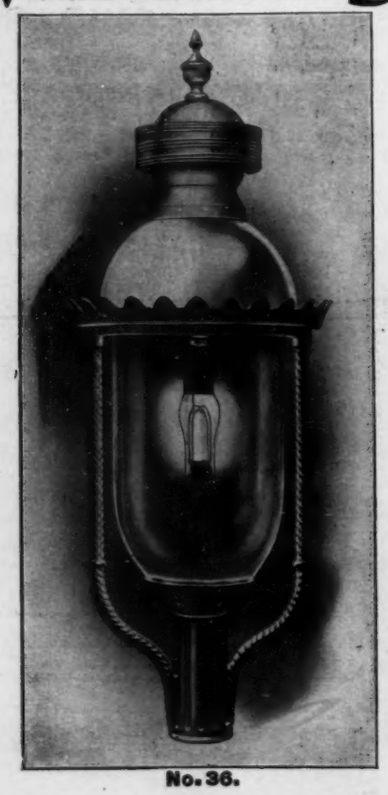
Day of Week.	Table No. 2. New York City. All Night Lighting. Date.	Complete Lighting in One Hour From Time Given P. M.	Complete Extinguishing in 50 Minutes From Time Given A.M.
Thu.	1	5.57	4.47
Fri.	2	6.07	4.37
Sat.	3	6.07	4.37
Sun.	4	6.07	4.37
Mon.	5	6.07	4.37
Tue.	6	6.07	4.32
Wed.	7	6.07	4.32
Thu.	8	6.07	4.32
Fri.	9	6.17	4.22
Sat.	10	6.17	4.22
Sun.	11	6.17	4.22
Mon.	12	6.17	4.22
Tue.	13	6.17	4.22
Wed.	14	6.17	4.22
Thu.	15	6.17	4.22
Fri.	16	6.27	4.17
Sat.	17	6.27	4.17
Sun.	18	6.27	4.17
Mon.	19	6 27	4.12
Tue.	20	6.27	4.12
Wed.	21	6.27	4.12
Thu.	22	6 27	4.12
Fri.	23	6.37	4.02
Sat.	24	6.37	4 02
Sun.	25	6.37	4.02
Mon.	26	6.37	4.02
Tue.	27	6.37	4.02
Wed.	28	6.37	4.02
Thu.	29	6.37	4.02
Fri.	30	6.47	3.52

TOTAL HOURS DURING 1909.

	Hrs.Min.
January	428.30
February	358.15
March	353.10
April	298.10
May	263.20
June	234.45
July	248.30
August	278.00
September	311.25
October	370.05
November	397.40
December	438.35
	3980.25
Deduct on account of 50 min. extinguishing time	30.25
Total, yr.	3950.00

NEW YORK, 318 West 42d Street. BOSTON, 820 Beacon Building. PHILADELPHIA, Broad and Arch Streets. ST. LOUIS, 712 Roe Building. CHICAGO, 218 La Salle Street. SAN FRANCISCO, 512 Oak Street.

WELSBACH STREET LIGHTING COMPANY



No. 36.

....OF AMERICA....

Controls and Operates the **Welsbach System of Street Lighting,**

Which includes its specially DESIGNED and PATENTED BURNER for PARK LIGHTING exclusively.

Uniformly SUCCESSFUL in 150 Cities and Towns.

By means of the Welsbach System of street lighting the superiority of GAS over electricity for street lighting has been fully demonstrated.

POINTS OF MERIT:

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Where there are no gas mains we can furnish an equally good light by our SELF-GENERATING NAPHTHA WELSBACH BURNER, and thereby supply a uniform light in all localities.

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THE BIGGEST LITTLE LIGHT IN THE WORLD.

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Gives 50-Candle Power.

Uses Two Feet of Gas per Hour.

Attaches to Any Gas Fixture.

Completely Hidden from View.

Use your own globe--either gas or electric.

Showing Welsbach Junior Light used in connection with ordinary glass globe.

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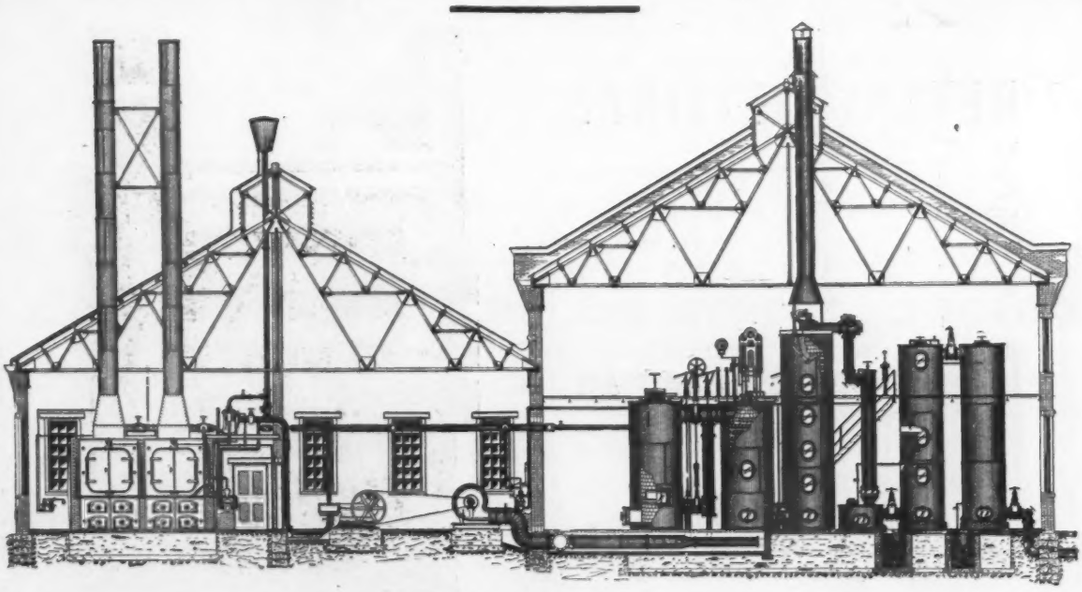

TOTAL SETS INSTALLED TO DECEMBER 31, 1908, ... 690
TOTAL DAILY CAPACITY, TO DECEMBER 31, 1908, ... 558,565,000 cu. ft.

Tar Extractors for Carburetted Water Gas.
Photometrical Apparatus.
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Straight Standpipe System for Coal Gas Retorts.
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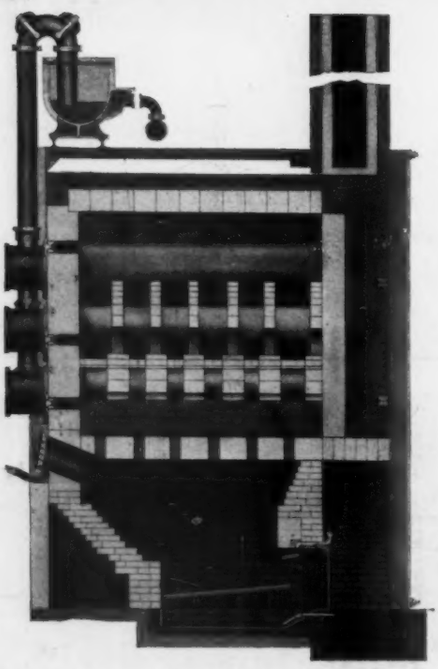

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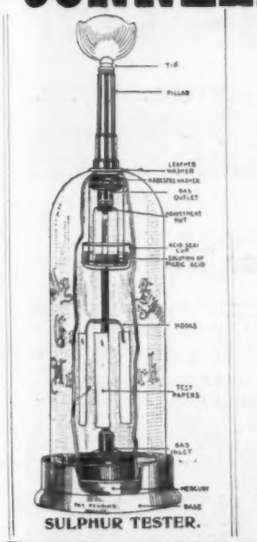

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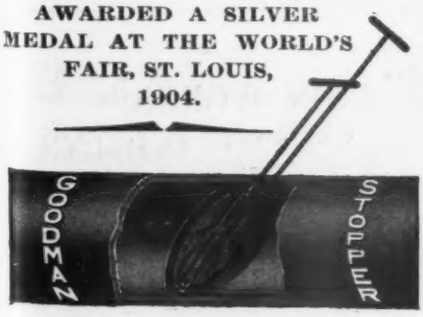

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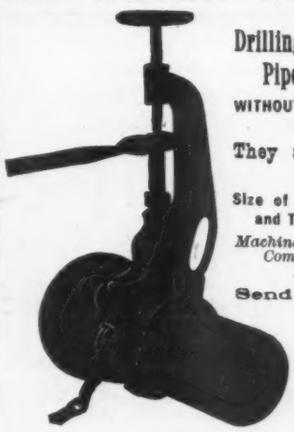

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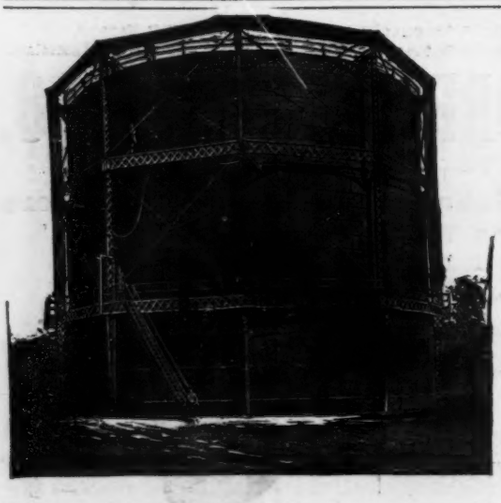

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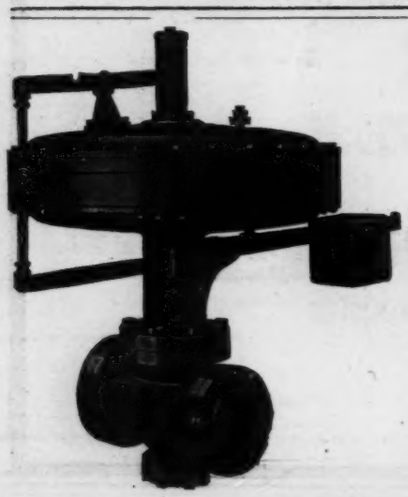

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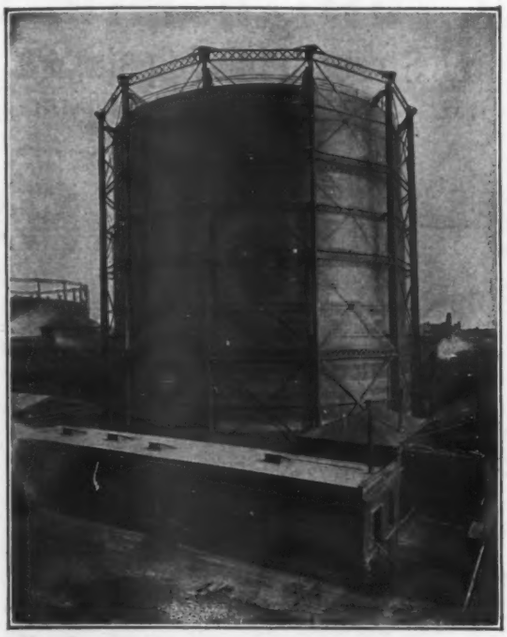

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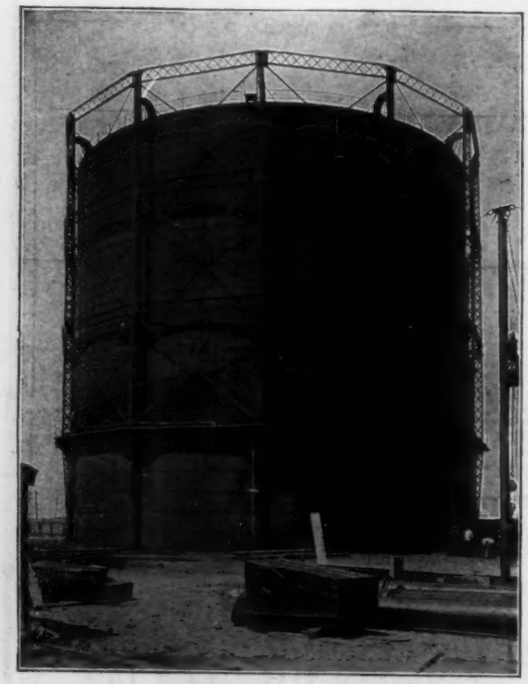

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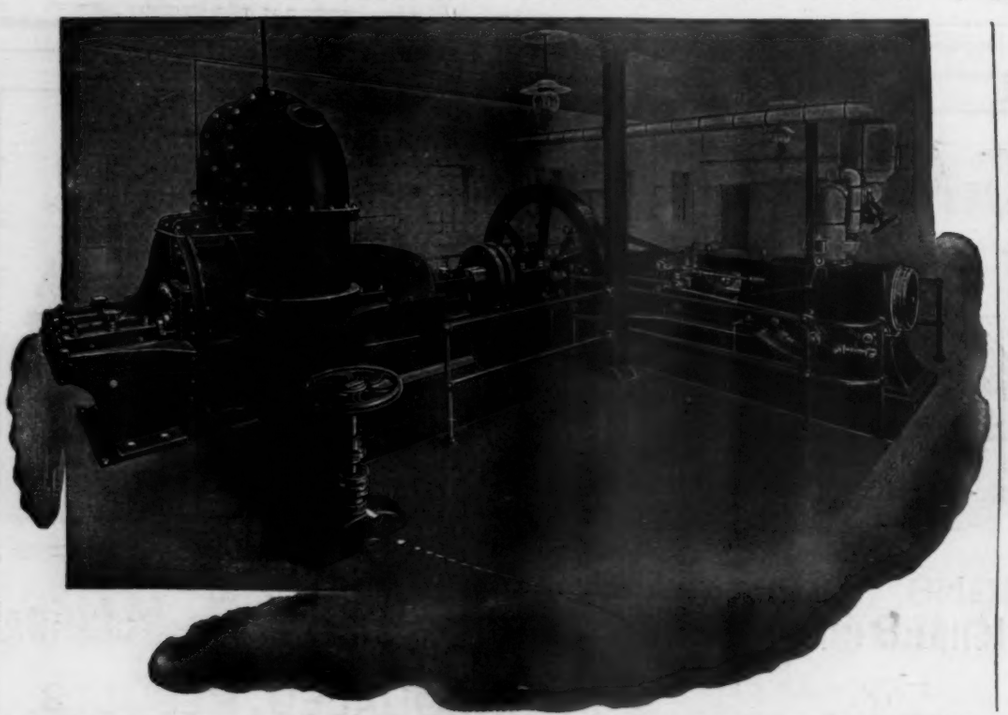

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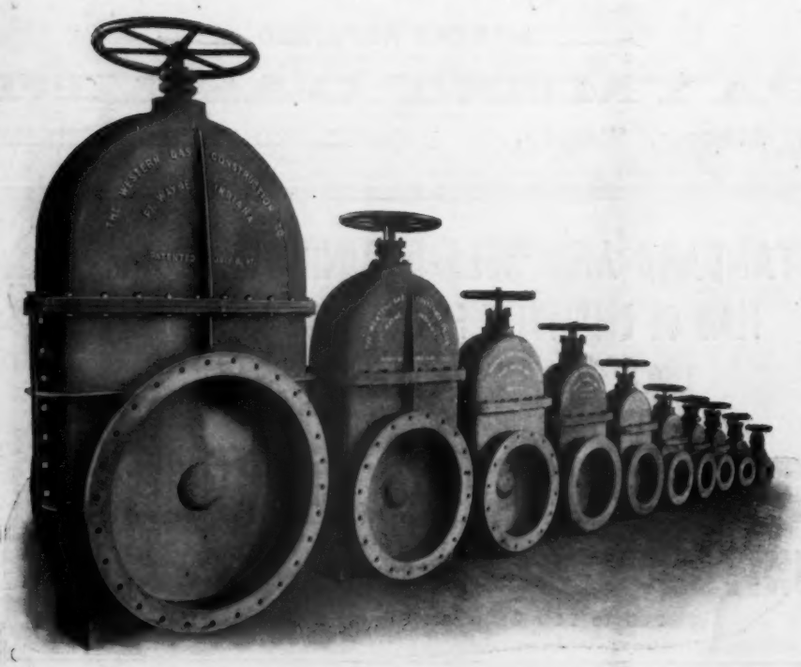

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